AUTOMATED LOGISTICS SUPPORT ANALYSIS TOOL VERSION 1.0

USER'S MANUAL
Battle Damage Assessment and Repair
(LSA Subtask 303.2.11)

APJ 966-621

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This User's Manual supports the automation of the US Army Logistic Support Analysis (LSA) Tasks and Subtasks. It is the complete users documentation package and provides guidance for using the Automated Logistic Support Analysis Tools (ALSAT). ALSAT provides a computer assisted guide to logisticians in the performance of LSA Tasks and Subtasks as defined in MIL-STD-1388-1a. It defines, organizes, tracks, models and reports on procedures that are used to develop supportability concepts. This particular module (one of four) refers to LSA Task 303 "Evaluation of Alternatives and Trade-Off Analysis". Within LSA Task 303, it fulfills the requirements of LSA Subtask 302.2.11, "Survivability and Battlefield Damage Repair Characteristics". To effectively utilize ALSAT this manual should be used conjunctively with the Executive Module User's Manual.

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APJ 966-621

AUTOMATED LOGISTICS SUPPORT ANALYSIS TOOL
Version 1.0

USER'S MANUAL

Battle Damage Assessment and Repair
(LSA Subtask 303.2.11)

under

CONTRACT DAAA21-86-D-0025

for

HQ US AMCCOM
INTEGRATED LOGISTIC SUPPORT OFFICE
AMSMC-LSP
ROCK ISLAND, IL

by

AMERICAN POWER JET COMPANY

RIDGEFIELD, NJ ARLINGTON, VA

WILLIAMSBURG, VA ST. LOUIS, MO

April 1991

FOREWORD

This manual supports the automation of the US Army Logistic Support Analysis (LSA) Tasks and Subtasks. It is the complete user documentation package and is provided for guidance in using **Automated Logistics Support Analysis Tools (ALSAT)**.

The ALSAT provides a computer assisted guide to logisticians in the performance of Logistics Support Analysis Tasks and Subtasks as defined in MIL-STD-1388-1A. It helps in identifying the optimal solutions to operation and support decisions addressed in the Logistics Support Analysis process during the various life cycle phases of an Equipment or Weapon System. It defines, organizes, tracks, models and generates reports on procedures that support the LSA concept. The objective behind the automation being to reduce the time spent by logisticians on tedious administrative efforts of organizing, collating and formatting information developed in the analysis process.

The automated LSA is being developed by the American Power Jet (APJ) Company, under contract to HQs AMCCOM. A major goal of the project is to unify the military and contractor approach to the performance of LSA. This approach was validated by AMCCOM, and necessary adjustment made to attain a fully useful and user-friendly program.

Structured methodologies were used to develop the software logic in accordance with MIL-STD-1388-1A "Logistic Support Analysis". This module refers to LSA Task 303 "Evaluation of Alternatives & Trade-Off Analysis". Within LSA Task 303, it fulfills the requirements of LSA Subtask 303.2.11, "Survivability & Battlefield Damage Repair Characteristics". The structured analysis and design for this module was presented in APJ Report 966-230. APJ's task performance has been closely coordinated with AMCCOM. Their experience has been captured in APJ's logic through continued coordination and review at the working level.

ALSAT simplifies the analyst's task. The user is taken through a series of automated steps leading to a successful result. More time is spent actually doing the work instead of determining what must be done next. Help is available at every step to guide the analyst through the task.

The software also provides the user with an electronic note pad to identify any areas which are critical to the issue at hand. In addition, a Summary and Status Sub-module forms an integral part of each LSA module. This sub-module allows the Program Manager to maintain an up-to-date record of the Tasks and Subtasks.

The LSA software is available through HQ AMCCOM, AMSMC-LSP to Program Managers and review activities personnel to provide guidance and a means of assessing LSA performance. Its use reduces

the time involved in completing the analysis while producing significantly enhanced results.

The purpose of the **Battle Damage Assessment and Repair (BDAR)** module is to assess Equipment and Weapon Systems for their "Survivability and Battlefield Damage Repair Characteristics". The Battle Damage Assessment and Repair concept stems from the need to restore mission essential functions to damaged equipment as soon as possible.

BDAR, as defined in AMCCOM R 750-5, is a wartime procedure to rapidly return disabled equipment to the operational commander by expediently fixing, by-passing or jury-rigging components to restore the minimum essential components required for a specific combat mission or enable the equipment to self-recover.

Battlefield Damage refers to **WHERE** the damage occurs and **NOT** the **TYPE or CAUSE** of the damage. It could be any damage regardless of the cause and covers random break-downs, operator errors, fair wear and tear and damage due to enemy action.

The two features that distinguish combat resilience from maintainability, are location and time:

> Combat resilience is a characteristic that is designed into equipment to allow partial or full restoration of functional capability quickly when an item fails or is damaged on the battlefield. Repairs must be made quickly, preferably at the location of the breakdown, so that the equipment can continue its original mission or undertake a more limited mission which may even be self recovery.

This manual and its accompanying software is to be used in conjunction with the APJ ALSAT Executive (APJ Report 966-600). This integration is required for the full functionality of the BDAR LSA analysis.

This work was performed by a task team for APJ: George Chernowitz, Scott Lerman, Siddhartha Chaudhuri, Kayin Tong and Jack Tauber. The team was ably supported in editing and typing by Barbara Boren and Denise Montanez.

The support of Messrs. Ned A. Shepherd and Ron Duclos of AMCCOM, AMSMC-LSP is gratefully acknowledged for their assistance in many regards.

All comments on this version are welcome and should be addressed to:

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF APPENDICES

CHAPTER 1
INTRODUCTION

1.1 GENERAL

REQUIREMENT

1.1.1 The Department of the Army has a requirement to provide definitive guidance to accomplishing LSA Tasks specified in MIL-STD-1388-1A, "Logistic Support Analysis". Headquarters AMCCOM has initiated action to structure LSA Task performance by defining the procedures necessary to do an analysis, thereby producing the desired results.

1.1.2 This software addresses that initiative by laying out the approach using current U.S. Army policies, procedures and techniques. It is part of a coordinated HQ, US Army Armament, Munitions and Chemical Command (AMCCOM) and American Power Jet Company effort to provide a uniform and reproducible approach to the logistic tasks addressed by MIL-STD-1388-1A "Logistic Support Analysis", and Army Regulation 700-127, "Integrated Logistic Support".

PROTOTYPE SOFTWARE

1.1.3 The software is a prototype version, and it demonstrates the possibility of automating the tedious tasks involved in providing effective Logistics Support during the various phases of a weapon systems life cycle. The prototype version represents how an integrated Executive shell can adequately manage and control the numerous LSA Tasks and Subtasks, in this case: Battle Damage Assessment and Repair (LSA 303.2.11).

1.1.4 The software has been designed such that the user need only input data once. If the data is subsequently required within the module, it is retrieved and used at that particular point. Numerous checks have been introduced within the software to ensure data integrity. While every effort has been made to provide an error free software, however, it must be recognized that the prototype only demonstrates a concept and should be viewed as such.

1.2 SCOPE

SCOPE

1.2.1 This module of the LSA software provides logisticians with a tool that allows them to closely follow the standardized methodology to be adopted in conducting the Battle Damage Assessment and Repair Analysis. It defines the steps, organizes and tracks the information, models the data and produces reports that conform to the requirements as outlined in MIL-STD-1388-1A.

NOTE

This user's manual forms an integral part of the Executive software and must be used in conjunction with the Executive manual.

1.2.2 The manual starts with an overview of the LSA software and a description of the Battle Damage Subtask. Chapter 2 provides the user with a **Quick Start Procedure** for the Battle Damage Repair and Assessment module. Chapter 3 gives the user a step-by-step walk through of the entire analysis adequately supplemented by graphic screen displays. Finally, Chapter 4 provides insight into the use of the **Reports Submodule**. This chapter also gives the format of the results output by the module.

1.3 OVERVIEW OF LSA SOFTWARE

LSA OVERVIEW

1.3.1 The software provides a computer assisted guide for working level personnel in performing Logistics Support Analysis Tasks and Subtasks as identified in MIL-STD-1388-1A. It affords assistance in identifying the optimal solutions to operation and support decisions addressed in the Logistics Support Analysis process during the various life cycle phases of an Equipment or Weapon System.

1.3.2 Every Task or Subtask may not be pertinent in all cases. It is suggested that the user review the complete list of Tasks and Subtasks to determine those applicable to the life cycle phase, weapon system and type of analysis being performed and indicate it in the Management module of the Executive, where the appropriate tailoring can be performed.

1.3.3 The software takes the user through a series of procedures to determine the Battle Damage Repair characteristics of a Weapon System. The procedures involve the completion of a series of data input screens which require knowledge of the system design, the battlefield environment and repair characteristics. Once the data has been entered the user must make decisions regarding battlefield repair. The software contains functionality for documenting the rationale of the decision.

1.3.4 To assist the user in gathering data, completing the data fields and making decisions, an extensive HELP system has been built into the software. It presents procedures for gathering and analyzing data in the Process Methodology. Software Guidance HELP is available to guide the user through the program. There is also a Context Sensitive HELP available for each field input.

1.3.5 The software also provides the user with an electronic notepad which may be used to record special considerations and outline areas which are critical to the issue at hand. In addition, a Summary and Status Submodule forms an integral part of each LSA module. This Submodule allows a manager to maintain an up-to-date record of the Tasks and Subtasks status.

1.3.6 The LSA software generates reports which broadly cover three areas - Status reports, Summary reports and Analysis result reports. The individual LSA modules generate reports specific to the task or subtask, whereas the Management module generates reports that provide the Program Manager with tools for effective control of the overall logistic support program.

1.4 LSA TASK 303.2.11 - BATTLE DAMAGE ASSESSMENT AND REPAIR

BDAR CONCEPT

1.4.1 The purpose of the **Battle Damage Assessment and Repair (BDAR)** module is to assess Equipment and Weapon Systems for their "Survivability and Battlefield Damage Repair Characteristics". The Battle Damage Assessment and Repair concept stems from the need to restore mission essential functions to damaged equipment as soon as possible.

1.4.2 The Battle Damage Assessment and Repair module was developed using state-of-the-art Computer Aided Software Engineering (CASE) methodologies. The basis for the development process was the Data Flow Diagrams and Structured Design submitted in APJ Report 966-230.

BDAR DEFINITION

1.4.3 BDAR, as defined in AMCCOM R 750-5, is a wartime procedure to rapidly return disabled equipment to the operational commander by expediently fixing, by-passing or jury-rigging components to restore the minimum essential components required for a specific combat mission or enable the equipment to self-recover.

1.4.4 Battlefield Damage refers to **WHERE** the damage occurs and **NOT** the **TYPE** or **CAUSE** of the damage. In accordance with AMCCOM R 750-S, it could be any damage regardless of the cause and covers random break-downs, operator errors, fair wear and tear, as well as any damage due to enemy action.

1.4.5 This module first identifies the critical components for each System or Subsystem during operation on the Battlefield. It then assesses these components for design deficiencies in terms of **Battlefield Survivability** and **Combat Resilience**.

1.4.6 A case in point is to differentiate between combat resilience and regular maintainability. The two features that distinguish combat resilience from maintainability are location and time.

COMBAT RESILIENCE

1.4.7 Combat resilience is a characteristic that is designed into equipment to allow partial or full restoration of functional capability quickly when an item fails or is damaged on the battlefield. Repairs must be made quickly, preferably at the location of the breakdown, so that the equipment can continue its original mission or undertake a more limited mission, which may even be self recovery.

1.4.8 The Subtask module categorizes system components as either candidates for design change or for the establishment of expedient maintenance/repair techniques in the battlefield environment.

1.4.9 Component designs that are not conducive to expedient maintenance/repair procedures are recommended for redesign. The recommendations clearly identify where the component is deficient in design and suggests the necessary modifications.

1.4.10 For components that are suitable to expedient repair procedures, the Subtask identifies the optimum repair method to be adopted in the battlefield to restore the System/Subsystem to full/partial operational capability.

1.4.11 This Task provides the processes and methods required to develop, extract and analyze data for battlefield repair. The information includes the testing requirements and source data needed to develop documents for use in the field.

1.5 303.2.11 - ORGANIZATION AND LOGIC

1.5.1 The 303.2.11 - Battle Damage and Assessment module is made up of two Submodules: **Analysis** and **Reports**. These two submodules are independent of each other. However, for the Reports submodule to produce meaningful results, it is imperative that the Analysis submodule be first performed so that data is available in the database for report generation.

1.5.2 The Analysis Submodule has been designed as a two-part process. The two subdivisions are

SUBTASK STRUCTURE

complete in themselves. The analyst can directly enter the second part without having to go through the first. It is, however, imperative that before the analyst attempts the second part, there is data relating to the first part within the system.

1.5.3 The first part identifies the System/ Subsystem and its Critical Components. It also defines the possible damage conditions and categorizes them as either requiring a design change or being suitable for repair on the battlefield.

1.5.4 In the second part, the analyst makes the appropriate recommendations for implementing the design change or the repair methodology.

EXECUTIVE ARCHI-TECTURE

1.5.5 Figure 1-1 explains the LSA Executive Architecture. The user must first log into the software and select the equipment to be worked on. This takes into account the fact that the LSA user is typically a single individual, working on a single weapon system and quite possibly on a limited number of areas of logistics analysis.

1.5.6 The architecture supports this theory and allows the user to perform analysis on a number of LSA Tasks and Subtasks in one sitting but on only one weapon system in one session. Should analysis be required on multiple equipments, the user would have to reenter the software for each equipment.

LSA LOGIC

1.5.7 Figure 1-2 presents the LSA Task/Subtask logic and is indicative of the decision processes involved in the performance of the individual logistics support analyses.

MANAGEMENT FACILITIES

1.5.8 Figure 1-3 displays the structure of the Management Module. The figure provides a clear understanding of the control functions incorporated into the module for upkeep and maintenance of the software.

1.6 SECURITY

SECURITY

1.6.1 The APJ software incorporates a two level security system explained in detail in the

Executive manual. It can only be accessed by users whose analyst ID and passwords have been entered into the system. Although the databases contain unclassified information, it is implicit that proper protection of the data be taken to preserve the integrity of the system.

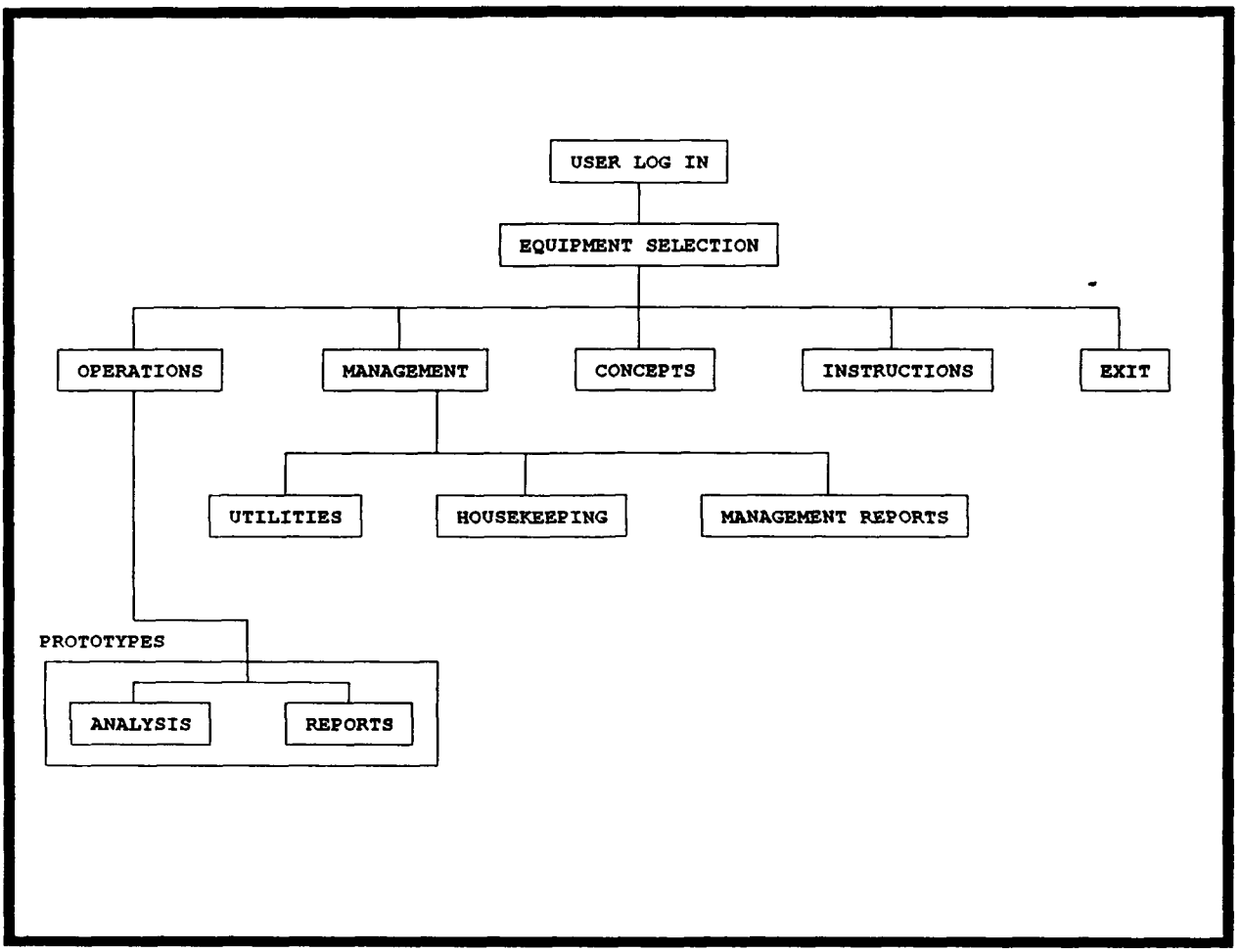

FIGURE 1-1: LSA EXECUTIVE ARCHITECTURE

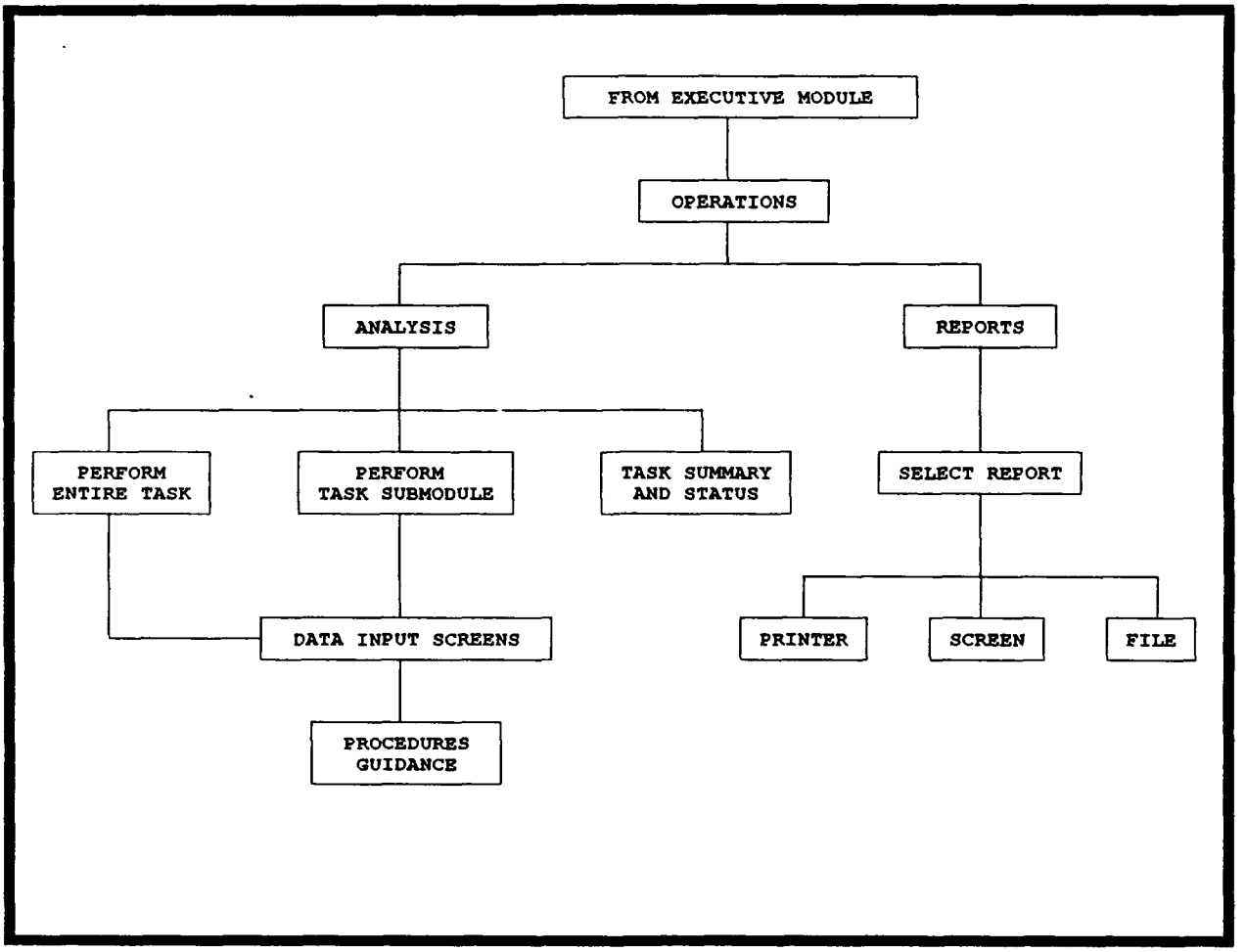

FIGURE 1-2: LSA TASK/SUBTASK LOGIC

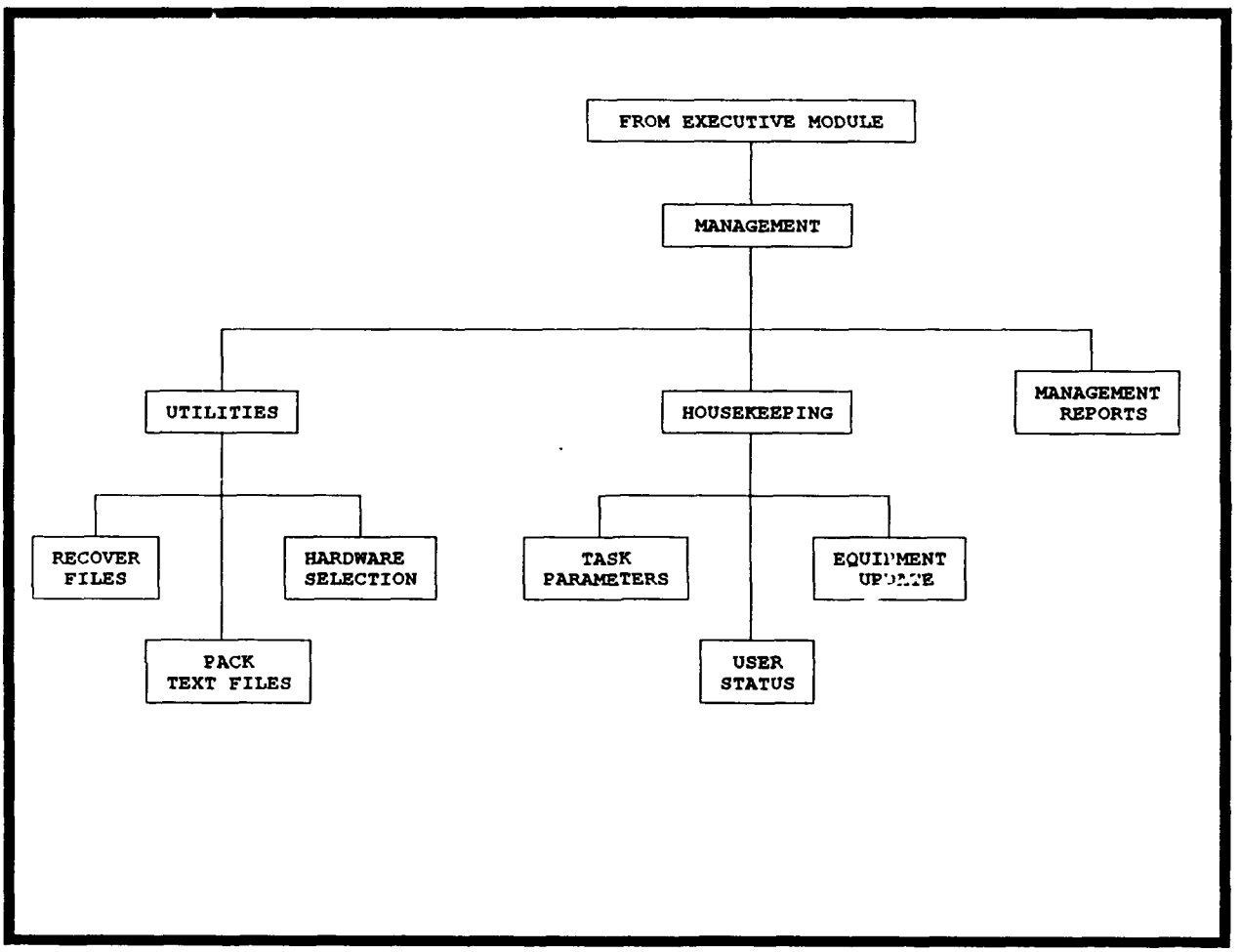

FIGURE 1-3: LSA CONTROL FACILITIES

CHAPTER 2
QUICK START

2.1 GENERAL

2.1.1 This chapter gives the **Quick Start** procedure to access the Battle Damage Assessment and Repair module in the Logistic Support Analysis Software.

NOTE

The manual assumes that the software installation procedures have been completed and that the LSA software is in a subdirectory called LSA which is on the C drive. If the software resides in any other drive or subdirectory, the user will need to make the appropriate changes.

2.2 START UP PROCEDURE

2.2.1 To enter the LSA software:

Against the prompt C:>
Type ***CD\LSA***
Press ***<ENTER>***

ENTER LSA SOFTWARE

Against the prompt C:\LSA>
Type ***LSA***
Press ***<ENTER>***

On the welcome screen
Press ***<ANY KEY TO CONTINUE>***

Type in your ***<ANALYST ID>***
Press ***<ENTER>***

Type in your ***<PASSWORD>***

Review Analyst information screen
Use the arrow keys to highlight ***<ACCEPT>***
Press ***<ENTER>***

If the Analyst information is incorrect
Use arrow keys to highlight ***<EDIT>***
Press ***<ENTER>***

Use the arrow keys to move the highlight bar to the required Equipment
Press ***<ENTER>***

Review Equipment details
Press ***<ANY KEY TO CONTINUE>***

If Equipment details require to be changed, contact the System manager. (The changes to the Equipment details can only be made in the **Management Module** by a user who has a **Manager** access level).

2.2.2 To perform an analysis in the Battle Damage and Assessment module:

PERFORM ANALYSIS

Use the **LEFT-RIGHT Arrow** keys to move the highlight bar
Select ***<OPERATIONS>***
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select ***<ANALYSIS>***
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select *<303>*
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select *<303.2.11>*
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select from the Main Menu ***<PERFORM ENTIRE TASK>***

2.2.3 To generate reports in the Battle Damage and Assessment module:

Use the **LEFT-RIGHT Arrow** keys to move the highlight bar
Select ***<OPERATIONS>***

GENERATE REPORTS

Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select ***<REPORTS>***
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select ***<303>***
Press ***<ENTER>***

Use the **UP-DOWN Arrow** keys to move the highlight bar
Select ***<303.2.11>***
Press ***<ENTER>***

On the Reports Menu
Use the **UP-DOWN Arrow** keys to move the highlight bar to the required report
Press ***<ENTER>***

To view the report on the screen
Select ***<SCREEN>***
Press ***<ENTER>***

To print the report
Select ***<PRINTER>***
Press ***<ENTER>***

To save report to disk
Select ***<DISK>***
Press ***<ENTER>***

Specify Path - Drive Name\Directory\Subdirectory\
File Name and Extension, e.g.,
C:\LSA\REPORTS\REP1

CHAPTER 3
MENU AND SCREEN DESCRIPTIONS

3.1 INTRODUCTION

3.1.1 The Battle Damage Assessment and Repair module of the LSA software has been developed as an interactive menu driven program. Prior to entering the module, the analyst is to go through the **LOG-ON** procedures and select the required Equipment. A detailed description of the **LOG-ON** procedure is provided in the **Executive Manual**.

3.1.2 The module itself is designed to be highly user friendly. There are three levels of on-line **HELP** available to the user. Wherever applicable, the user is provided with look-up screens to facilitate data entry. A detailed discussion on **HELP** is provided in Para 3.11

CONCEPT

3.1.3 The concept behind the development of the screens is to enable the user to first review the various input fields on the screen. If required, the user may review the **"PROCESS METHODOLOGY"** and **"SOFTWARE GUIDANCE" HELP**. This will allow the analyst to become familiar with the step-by-step procedures involved in performing the analysis and using the software module. The bottom of the screen prompts the analyst in selecting an appropriate function key (adding, editing etc).

3.2 MAIN MENU SCREEN

3.2.1 The first screen that appears within the module is the Subtask's **MAIN MENU SCREEN**. The Main Menu screen is shown in Figure 3-1.

MAIN MENU SCREEN

3.2.2 The Main Menu screen displays the Subtask Number and Name at the top of the screen together with the System Date and Time. It also displays the Scheduled Start and Finish Dates for the Subtask as assigned in the Executive module.

3.2.3 The Main Menu screen provides three analysis options which allow the user to either complete the entire subtask or attempt only a part of the subtask in one sitting. In addition to the three analysis options, the menu also has a Subtask Summary and Status option. The Subtask Summary and Status option is only accessible by a user with a **MANAGER** level status.

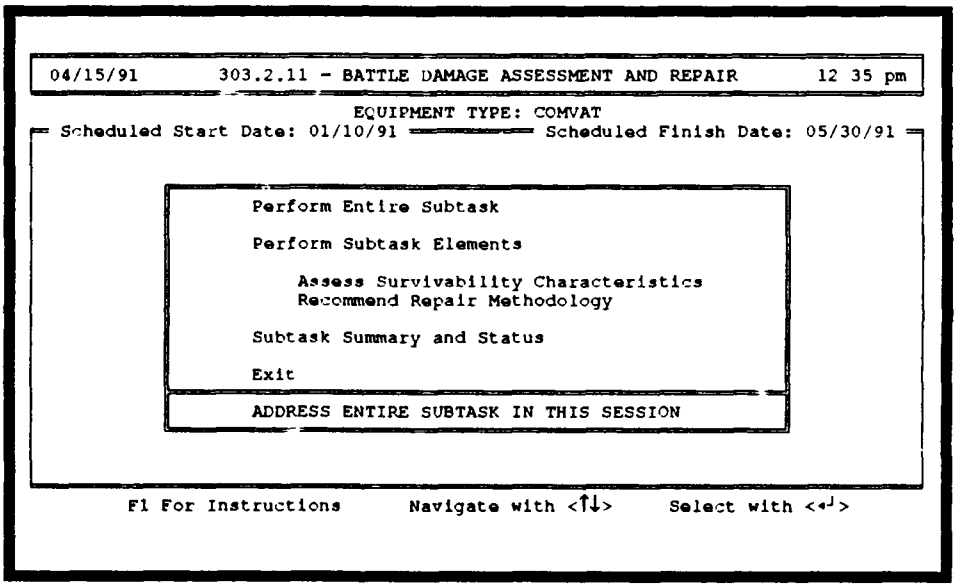

FIGURE 3-1: MAIN MENU FOR LSA SUBTASK 303.2.11

3.3 MAIN MENU

3.3.1 The three analysis options available to the user are:

Perform Entire Subtask
Assess Survivability Characteristics
Recommend Repair Methodology

ENTIRE TASK

3.3.2 **Perform Entire Subtask** - This option allows the user to run through the entire module in one session.

SURVIV-ABILITY CHARAC-TERISTICS

3.3.3 **Assess Survivability Characteristics** - In this option, the user is to identify the Subsystems and the Critical Components of the Equipment. After identifying the critical components, the user can go on to identify the various damages that can occur to the components and the function lost as a result of the damage. The analyst then recommends whether a design change is required to improve the survivability characteristics of the component or whether the component is repairable in the battlefield environment.

REPAIR METHODS

3.3.4 **Recommend Repair Methodology** - In this option, the user recommends the suitable design modification or the Repair Methodology to be adopted for each component identified as critical in the previous option.

SUBTASK SUMMARY AND STATUS

3.3.5 **Subtask Summary and Status** - This option allows a Manager level user to maintain an updated summary of the Subtask's status. The user may record any activities that require the attention of another office. The analyst may also assign an **ACTION DATE** and allocate a **CRITICALITY RATING** to it.

EXIT

3.3.6 **Exit** - This option returns the user to the Executive Module from where a different LSA Task or Subtask may be accessed.

3.3.7 **Selecting Options** - Use the **UP-DOWN Arrow** keys to move the highlight bar to the desired option
Press ***<ENTER>***.

INSTRUCTION

3.3.8 **F1-Instructions** - These instructions provide a detailed description of the Task and the concept used to develop the module.

3.3.9 To view instructions on the working of this module
Press ***<F1>***

3.3.10 **Messages** - A message appears below the Main Menu box which tells the user the scope of the highlighted option.

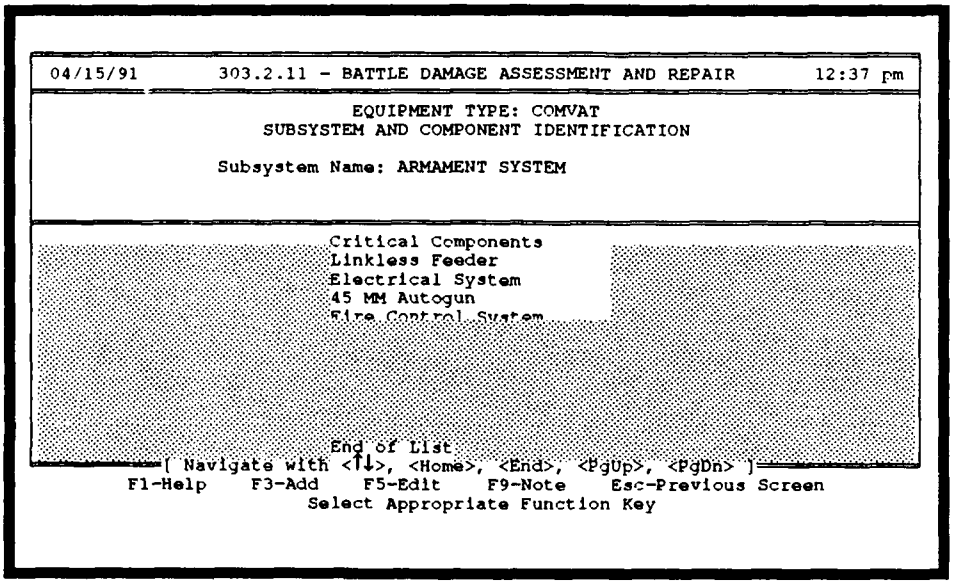

FIGURE 3-2: SUBSYSTEM AND CRITICAL COMPONENT LIST

3.4 SUBSYSTEM AND COMPONENT IDENTIFICATION SCREEN

SUBSYSTEM AND COMPONENT IDENTIFICATION

3.4.1 The objective of this process is to select the System or Subsystems to be analyzed and evaluate the components for their criticality. Figure 3-2 displays the Subsystem and Component Identification screen. The System and Subsystem names must conform to the Work Breakdown Structure (WBS) set forth in MIL-STD-881. The analyst is to then evaluate the components for their criticality in performing the functional requirements of the Equipment. The user must determine the extent to which a component is critical to the operation of the Equipment, System or Subsystem. In doing so, the survivability characteristics of the component and the functional requirements of the System or Subsystem must be considered.

3.4.2 On this screen the analyst lists the System and Subsystems to be analyzed. For each

System or Subsystem so identified, the user lists the Critical Components.

3.4.3 The screen allows the analyst to enter data into two fields:

Subsystem Name
Critical Component Name

3.4.4 To enter the Subsystem name, the analyst must obtain the Work Breakdown Structure (WBS), technical drawings and specifications for the equipment to be analyzed. If no WBS is available for the equipment, the Subsystem may be selected from the default list that appears on the screen. The default Subsystem list is generic in nature and not all inclusive. The System/Subsystem names that appear on the list are:

SUBSYSTEM NAMES

Power Plant Systems
Fuel Systems
Electrical Systems
Hydraulic/Pneumatic Systems
Transmission Systems
Drive Systems
Track/Suspension
Aircraft Airframe Systems
Armament Systems
Fire Control Systems
Communication and Control Systems
Electronic Systems

3.4.5 The analyst and the systems engineer must together develop a list of the Systems and Subsystems that should be analyzed. The list should include the Subsystems that have high failure rates as indicated in the FMECA data. Selection may also be based on mission criticality, the projected extent of battle damage, considering the Subsystem's vulnerability and the impact its loss would have on the operation of the system.

3.4.6 The following documents refer to the implementation of BDAR:

AR 70-1, Systems Acquisition Policy and Procedure

REQUIRED DOCUMENTS AND PROCEDURES

AR 750-1, Materiel Maintenance Concepts and Policies
AR 700-127, Integrated Logistics Support (ILS)
MIL-STD-1388-1A/2A, Logistics Support Analysis
MIL-M-63003 Preparation of BDAR TMs
AMCCOM Regulation 750-5 Battle Damage Assessment and Repair
Engineering Drawings and Technical Specifications of the Equipment, System and Subsystem from the Program Managers Data File
Design Specifications from the Acquiring Activity File.

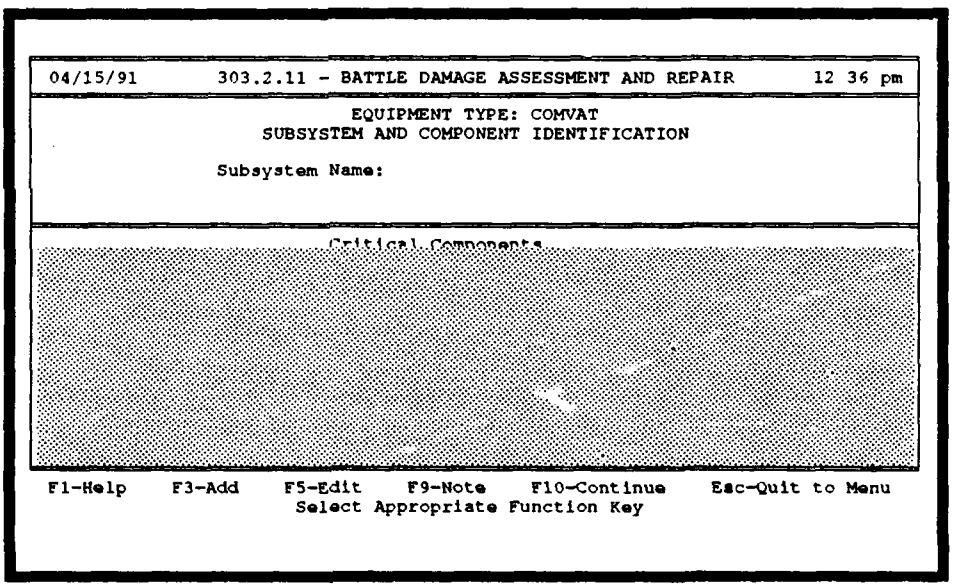

FIGURE 3-3: SUBSYSTEM AND CRITICAL COMPONENT IDENTIFICATION

3.4.7 The analyst must identify which of the components in the Equipment **have to be** repairable on the battlefield. Only those components that are critical to **Mission Performance** or to **Self Retrieval** are to be listed as CRITICAL (have to be repairable) components.

TO ADD DATA

Figure 3-3 displays the basic Subsystem screen as it would appear at the beginning of the analysis process.

To add a Subsystem Name
Press ***<F3>***

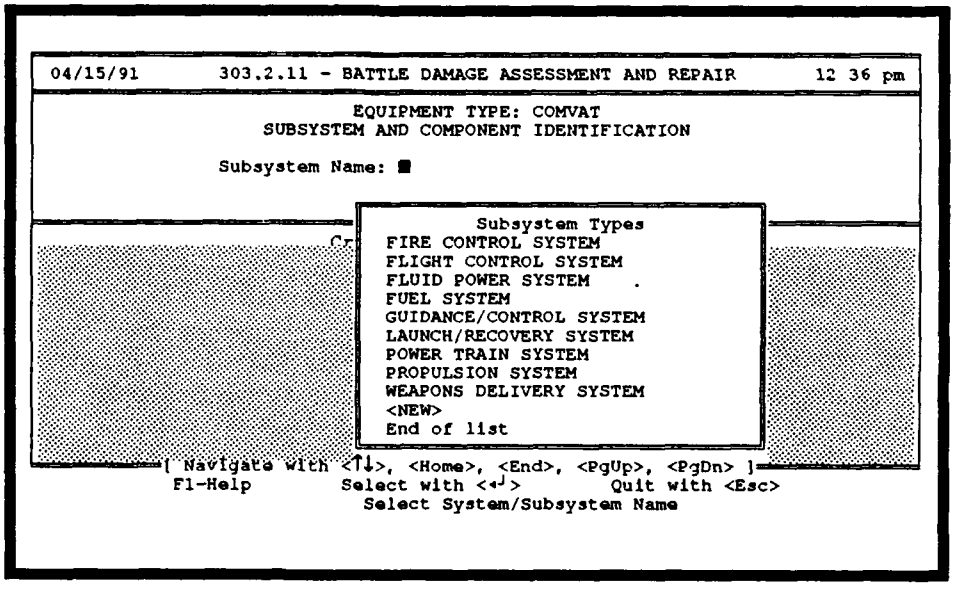

FIGURE 3-4: ADD SUBSYSTEM NAME

Select a Subsystem from the default list that appears on the screen (Figure 3-4). Use the **UP-DOWN Arrow** keys to move the highlight bar to the desired Subsystem
Press ***<ENTER>***

ADD SUBSYSTEM NAME

To enter a Subsystem name that does not appear on the default list

Use the **UP-DOWN Arrow** keys to move the highlight bar to select the Subsystem marked **<NEW>** (Figure 3-4).
Press ***<ENTER>***

A blank field appears at the bottom of the list. Against the cursor

Type in the ***<DESIRED SUBSYSTEM NAME>***
Press ***<ENTER>***

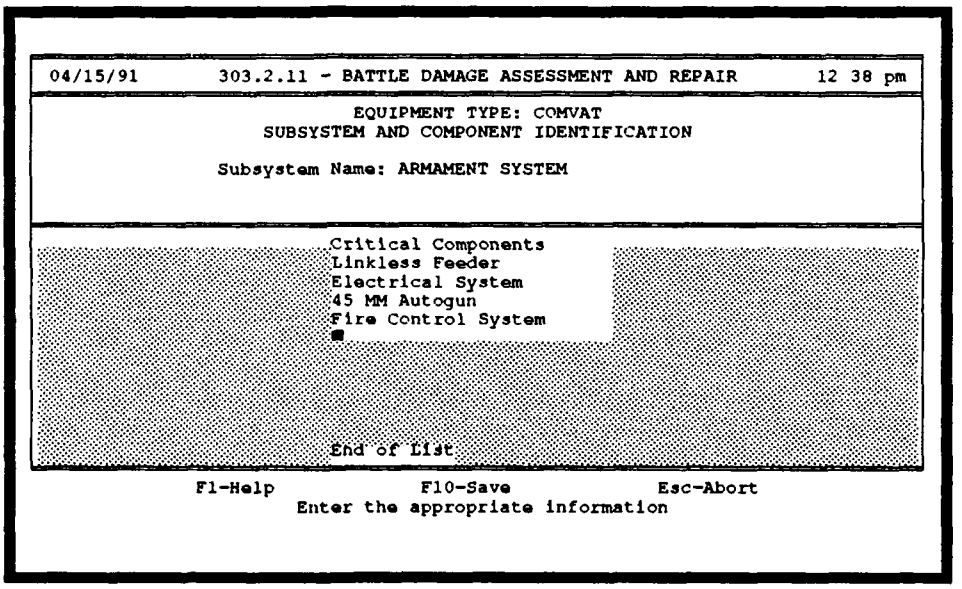

FIGURE 3-5: ADD CRITICAL COMPONENT NAME

Figure 3-5 displays the screen as it appears when the user has chosen to **ADD** a Critical Component for the Subsystem.

To enter the Critical Components for the Subsystem respond to the prompt at the bottom of the screen
Press ***<Y>***

ADD CRITICAL COMPONENTS

A blank field with a cursor appears on the screen at the bottom of the list (Figure 3-5)

Type in the ***<NAME OF THE CRITICAL COMPONENTS>***

To save the data after each entry, respond to the prompt at the bottom of the screen
Press ***<Y>***

TO EDIT DATA

To edit data on this screen, start by selecting the Subsystem name whose record is to be edited

To select Subsystem
Press ***<F8>***

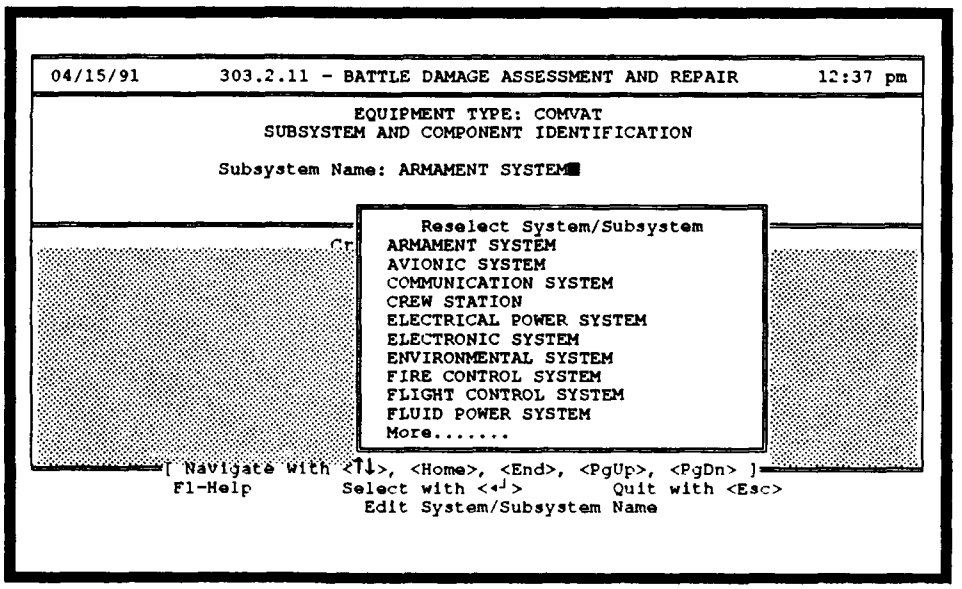

FIGURE 3-6: EDIT SUBSYSTEM NAME

CHANGE SUBSYSTEM NAME

A look-up window containing the names of the Subsystems entered for the Equipment appears on the screen (Figure 3-6). Use the **UP-DOWN Arrow** keys to move the highlight bar to the Subsystem that is to be edited.
Press ***<ENTER>***

If you do not wish to change the Subsystem name, respond to the prompt at the bottom of the screen
Press **<N>**

If you wish to change the Subsystem name, respond to the prompt at the bottom of the screen
Press **<Y>**

When **'Y'** is pressed, the default listing of Subsystems appears in a look-up window. Use the **UP-DOWN Arrow** keys to move the highlight bar to the Subsystem you wish to change to
Press **<ENTER>**

When a Subsystem is selected, a listing of the Critical Components for the Subsystem appears on the screen.

To edit the Critical Components - Use the **UP-DOWN Arrow** keys to move the highlight bar to the critical component name to be edited
Press **<ENTER>**

NOTE

The user can only change to a Subsystem name that appears on the default list. This Subsystem name will now replace the original Subsystem name for the equipment. All the critical components of the original Subsystem will now form a part of the re-selected Subsystem. However, the user may edit the critical components.

CHANGE CRITICAL COMPONENT NAME

Type in the *<CORRECT CRITICAL COMPONENT NAME>*
Press **<ENTER>**

After each entry the system prompts you to save the data. To save the data - in response to the prompt at the bottom of the screen
Press ***<Y>***

To move to the next screen without entering data in this screen
Press ***<F10>***

3.5 COMPONENT SURVIVABILITY CHARACTERISTICS SCREEN

3.5.1 In this process the user selects each of the Subsystems in turn for analysis. Figure 3-7 displays the Critical Components together with the functions lost and whether the damage requires a design modification or is repairable on the battlefield.

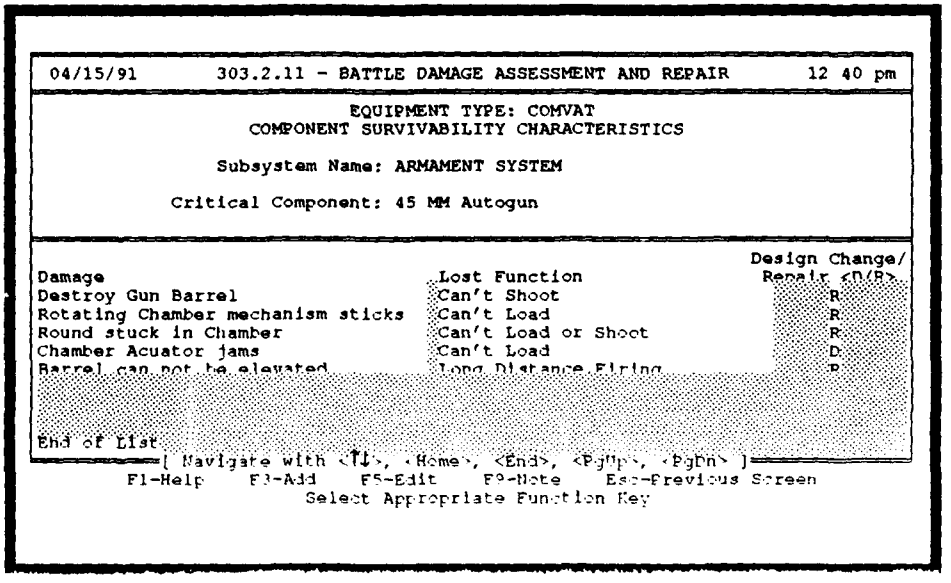

FIGURE 3-7: CRITICAL COMPONENT DAMAGE CHARACTERISTICS

3.5.2 This process assesses all possible types of damage that could be caused to the critical components of the Subsystem when operating in the battlefield environment. It further determines the functions that would be lost due to the various types of damage.

COMPONENT SURVIV-ABILITY CHARAC-TERISTICS

3.5.3 The damage assessment must segregate critical components that are poorly designed for survivability and/or battlefield repair from those that are resilient to battle damage and are capable of being repaired on the battlefield.

3.5.4 A detailed explanation of the methodology to be adopted can be found in APJ Report 966-230 and in the Process Methodology section of the **HELP** within the software.

3.5.5 The Component Survivability Characteristics screen displays a list of critical components for the Subsystem. The user can select a critical component and enter/edit the relevant data for it.

NOTE

This screen does not allow the analyst to add/edit a Subsystem name or the name of one of its Critical Components.

3.5.6 To complete the process obtain the following data from the Program Manager:

REQUIRED DOCUMENTS AND PROCEDURES

Required Operational Characteristics
Functional Requirements Data
O&O Plan
Technical Drawings and Specifications
Level of Repair results

Then for each component, identify the possible damages that could occur.

3.5.7 Each possible damage that could occur to the component is to be identified and listed together with the Operational and/or Functional Requirement the Component will be unable to perform.

CRITICAL COMPONENT CHARAC-TERISTICS ASSESSMENT

3.5.8 The user must assess each Critical Component and identify whether the damage is repairable on the battlefield or whether a design change is required to make the Critical Component more battle resilient.

3.5.9 In determining the battle resilience and repairability of the Critical Component, the user should confirm that it is possible to conduct a damage assessment on the Critical Component in the battlefield environment.

3.5.10 The process requires that a trade-off be made between Accessibility and Survivability of all critical components. The critical components found deficient in these areas of design should be identified as requiring design modifications.

NOTE

For an equipment to have good survivability characteristics, it should be typically shelded; whereas accessibility involves allowing the component to be easily accessed thereby exposing it to potential damage. The design must accomplish both objectives.

3.5.11 The critical components that are designed for expedient repairs in the battlefield environment are to be identified as Repairable Critical Components.

CRITICAL COMPONENT CATEGORIES

3.5.12 The Critical Components are then classified in two categories:

Requiring a Design Modification
Capable of being repaired in the battlefield environment

ADD DATA

Figure 3-8 displays the basic Component Survivability screen. It has the field names to facilitate collecting the required data prior to commencing the actual analysis using the software.

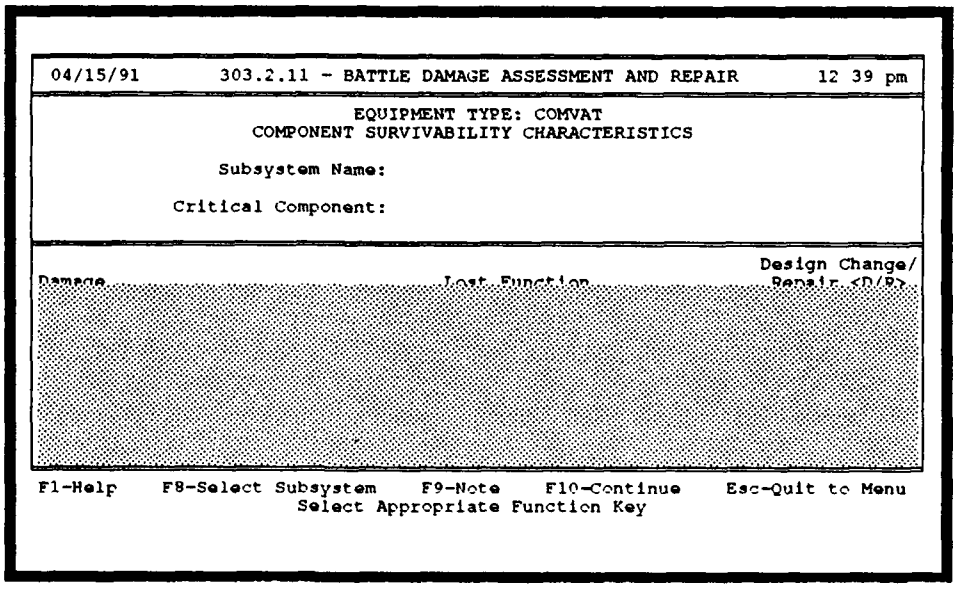

FIGURE 3-8: CRITICAL COMPONENT SURVIVABILITY CHARACTERISTICS

To select Subsystem
Press *<F8>*

A look up window containing the Subsystem names for the equipment appears on the screen (Figure 3-9).

Use **UP-DOWN arrow** keys to move the highlight bar. Highlight the required Subsystem name on the look up window.
Press ***<ENTER>***

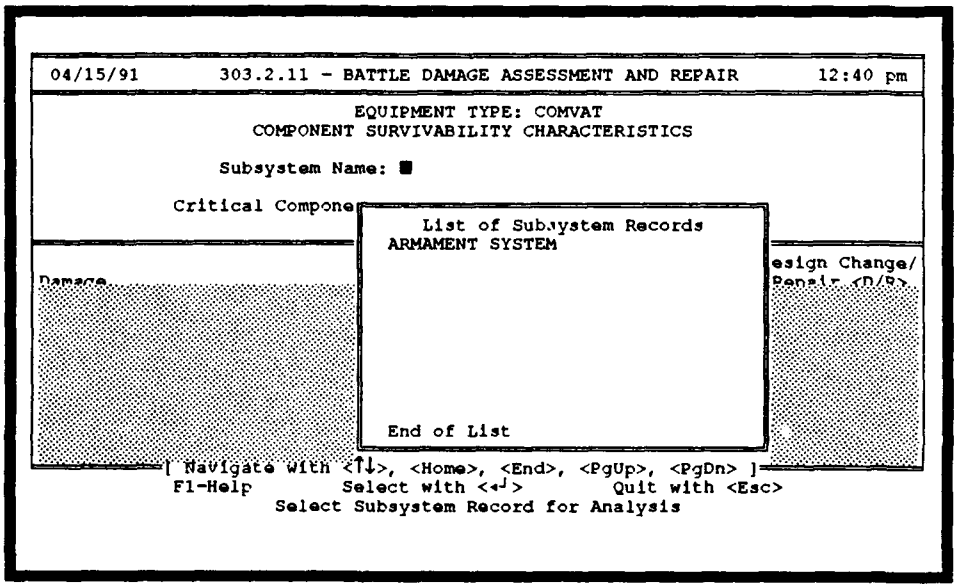

FIGURE 3-9: SELECT SUBSYSTEM RECORD FOR ANALYSIS

A list of the Critical Components that have been entered for the Subsystem appears on the screen (Figure 3-10). Use the **UP-DOWN arrow** keys to move the highlight bar to the required Critical Component
Press ***<ENTER>***

ADD COMPONENT SURVIV-ABILITY DATA

To add a new damage for the Critical Component
Press ***<F3>***

If no damages have been entered into the system for the component a blank line appears with the cursor in the damage field.

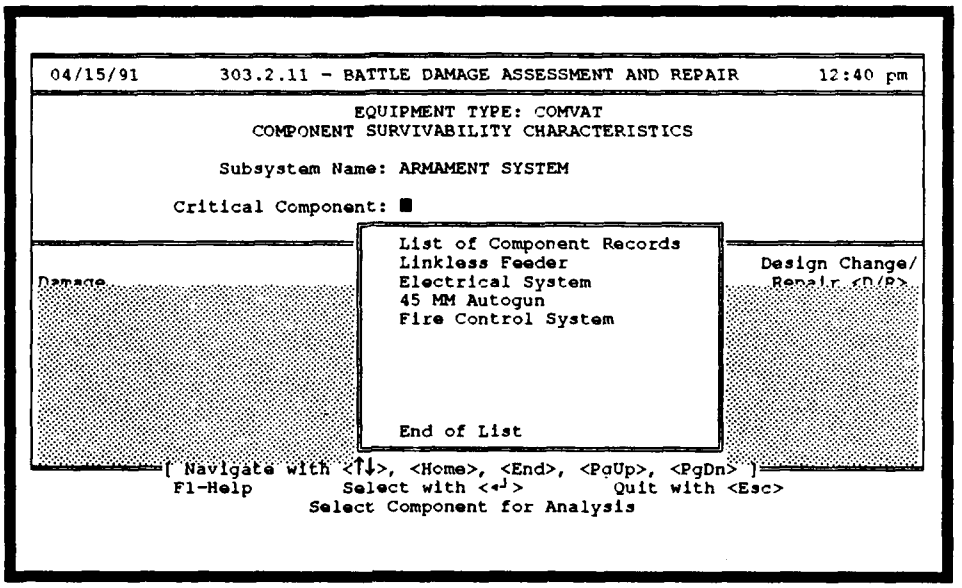

FIGURE 3-10: SELECT CRITICAL COMPONENT FOR ANALYSIS

If damages have been entered into the system for the component, a highlighted blank line appears at the bottom of the list (Figure 3-11).

ADD CRITICAL COMPONENT DAMAGE

Type in the ***<NAME OF THE DAMAGE>***
Press ***<ENTER>***

The highlight bar moves across to the **FUNCTION LOST** field.

IDENTIFY LOST FUNCTIONS

Type in the ***<NAME OF THE FUNCTION LOST>***
Press ***<ENTER>***

The highlight bar moves across to the Design Change/Repair field

To indicate a Design Change for the Critical Component
Type ***<D>***

To indicate that the component is repairable on the battlefield

Type **<R>**

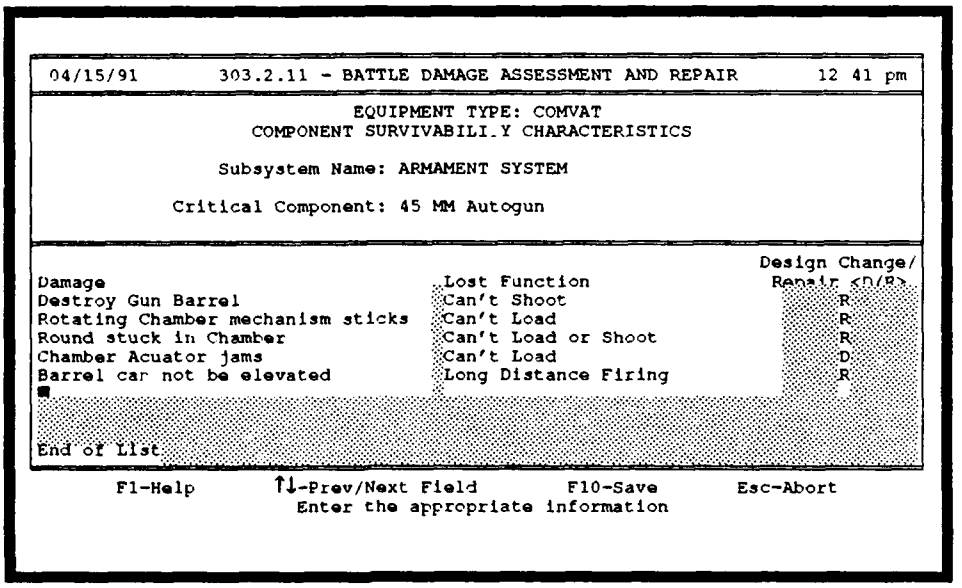

FIGURE 3-11: ADD CRITICAL COMPONENT DAMAGE DETAILS

To enter more damages for the same Critical Component respond to the prompt
Type in **<Y>**

To save the data that has been entered
Press ***<F10>***

TO EDIT DATA

The working of the Component Survivability Characteristics screen in the **EDIT** mode is similar to its working in the **ADD** mode (Refer Figure 3-7 through Figure 3-11).

To select Subsystem
Press ***<F8>***

Use the **UP-DOWN arrow** keys to move the highlight bar. Highlight the required Subsystem name on the pick list that appears on the screen
Press ***<ENTER>***

EDIT COMPONENT SURVIV-ABILITY DETAILS

When the Subsystem is selected, a look-up window containing a list of the Critical Components for the Subsystem appears on the screen.

Use the **UP-DOWN arrow** keys to move the highlight bar to the required Critical Component and
Press ***<ENTER>***

Use the arrow keys to move the highlight bar. Highlight the damage condition to be edited.
Press ***<F5>***.

Use the arrow keys to highlight the field you wish to edit
Type in the ***<CORRECT DATA>***

To save the changes
Press ***<F10>***

3.6 RECOMMENDED DESIGN CHANGES SCREEN

3.6.1 This screen allows the user to recommend design changes that must be implemented to improve the survivability and battle resilience characteristics of the Critical Component. These design changes may also be required to make the component repairable in the battlefield environment.

3.6.2 Figure 3-12 displays the Recommended Design Change screen. Each damage condition has an associated memo field in which the user is to enter, in detail, where the component lacks in survivability, battle resilience and repairability characteristics and how these may be improved by incorporating the recommended design modifications.

RECOM-MENDED DESIGN CHANGES

3.6.3 The analyst must consult with the weapon system and maintenance engineers to recommend design changes which improve the survivability,

battle resilience and the repairability of the Critical Component.

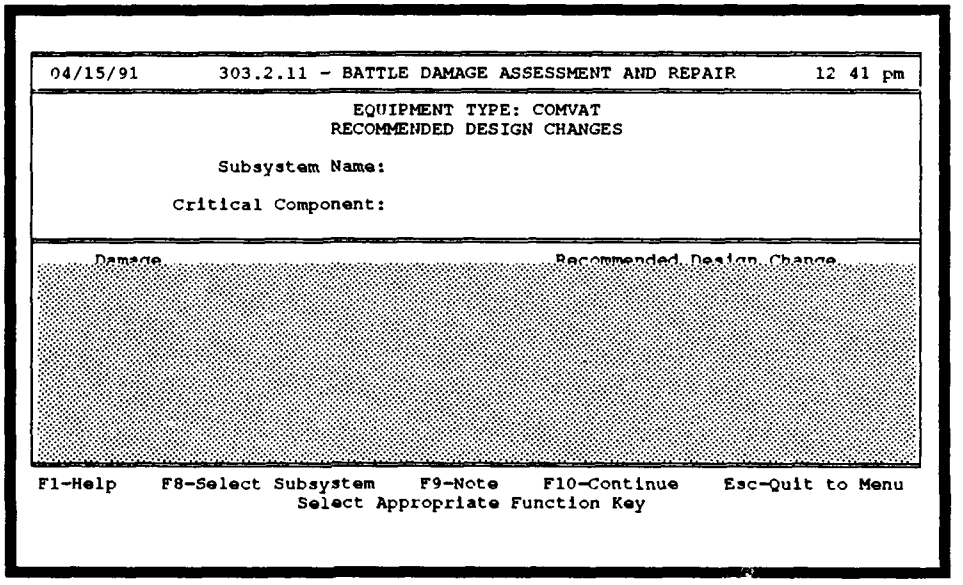

FIGURE 3-12: RECOMMENDED DESIGN CHANGES

3.6.4 In assessing the design deficiency of the System, Subsystem or Component, the analyst must ensure that the design incorporates one or more of the following factors:

PROCESS METHOD-OLOGY

Easy accessibility of parts
Automatic assessment capability
Designed for testing
Designed for elimination/bypassing
Incorporates built-in-redundancy
Contributes to survivability
Permits repair in the battlefield environment

3.6.5 The associated memo field is to be used to specify, in detail, how the design modification will improve the survivability, battle resilience and repairability characteristics of the Critical Component.

TO ADD DATA

Figure 3-13 shows the Recommended Design Change details screen. The screen allows the user to enter details regarding the design modification to be made to a critical component. To **ADD** data to the screen, the user must start by selecting the Subsystem to be modified.

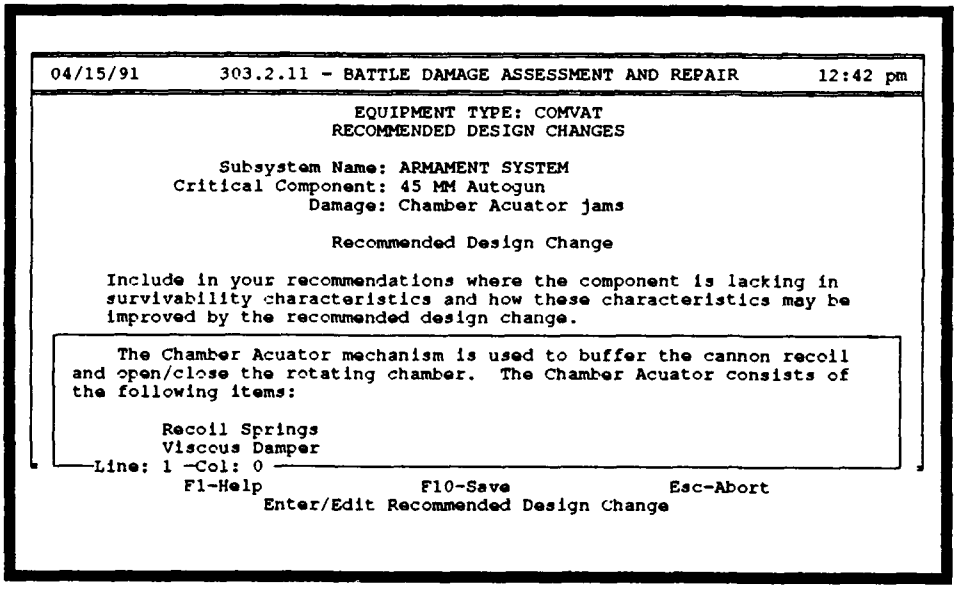

FIGURE 3-13: RECOMMENDED DESIGN CHANGE DETAILS

To select Subsystem
Press ***<F8>***

ADD DESIGN CHANGE DETAILS

Use the **UP-DOWN arrow** keys to select the Subsystem name from the look up window on the screen
Press ***<ENTER>***

A list of the Critical Components, that have been entered for the Subsystem, appears on the screen. Use the arrow keys to move the highlight bar to the required Critical Component
Press ***<ENTER>***

A list of all damage conditions for the component that require a design change appears on the screen.

Use the arrow keys to move the highlight bar. Highlight the damage condition that you wish to work on
Press ***<ENTER>***.

A memo field appears on the screen. The memo field works as a full text word processor. Use the memo screen to enter the relevant details regarding the recommended design change
Type in ***<RELEVANT DETAILS>***

To save the changes
Press ***<F10>***

TO EDIT DATA

To select Subsystem
Press ***<F8>***

Use the arrow keys to move the highlight bar. Highlight the required Subsystem name on the pick list that appears on the screen
Press ***<ENTER>***

MODIFY DESIGN DETAILS

A list of the Critical Components for the Subsystem appears on the screen (Figure 3-10). Use the **UP-DOWN arrow** keys to move the highlight bar to the required Critical Component and
Press ***<ENTER>***

A list of all damage conditions for the components that require a design change appears on the screen (Figure 3-11). Use the **UP-DOWN arrow** keys to move the highlight bar. Highlight the damage condition that you wish to work on
Press ***<ENTER>***.

A memo field appears containing the relevant details for the Critical Component appears on the screen. The memo field works as a full text word processor. Use the memo screen to edit the

relevant details regarding the recommended design change
Type in ***<RELEVANT DETAILS>***

To save the changes
Press ***<F10>***

3.7 REPAIR METHODOLOGY IDENTIFICATION SCREEN

IDENTIFY OPTIMUM REPAIR METHOD-OLOGY

3.7.1 On this screen the analyst recommends the optimum methodology for repair of the Critical Component in the battlefield environment. It also requires the user to provide a detailed description of the repair method and the capability of the Subsystem after the repair has been effected.

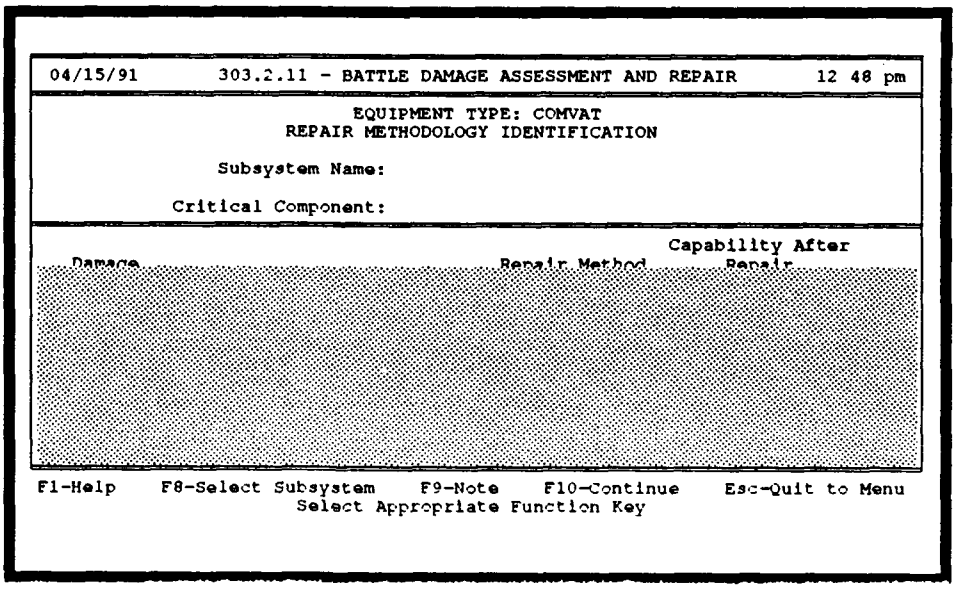

FIGURE 3-14: REPAIR METHODOLOGY IDENTIFICATION

3.7.2 Figure 3-14 depicts the basic Repair Methodology Screen. The process evaluates the available repair alternatives to restore as much of the System, Subsystem and Critical Component's

operational capabilities as possible. The process also identifies the optimum method of repair from the available alternatives.

3.7.3 Each damage condition has two associated memo fields. In the first memo screen the analyst is to enter the detailed procedure to be adopted in executing the repair, the resources required for the repair (together with their source), and the time that will be required to complete the repair.

3.7.4 The second memo screen pertains to the capability of the system after the repair has been effected. Here too, the analyst enters, in detail, the capability of the system and any limitations imposed on it.

PROCESS METHOD-OLOGY

3.7.5 To accomplish the above process, the user must assess the severity of the damage as regards mission accomplishment (with full or partial capability) and identify the nature of repairs required to restore the lost function (either fully, partially or to a state where the Equipment is capable of self recovery as soon as possible).

3.7.6 In determining the repair method, the analyst must consider the availability of the required resources in the battlefield environment.

3.7.7 The user must identify the resources required to undertake the repair in terms of required tools, manpower, time, etc. The analyst must also identify the operational capability of the Equipment, System or Subsystem after repair.

3.7.8 The analyst may select from the following repair options

REPAIR METHOD OPTIONS

Replace
Mending
Bypass
Other means

3.7.9 After providing a detailed description of the repair method, the user evaluates the Equipment, System or Subsystem's operational capability after repair and describes in detail,

any limitations that may have been imposed on the Equipment, System, Subsystem and Critical Component

3.7.10 The operational capability must fall into one of three categories:

OPERATIONAL CAPABILITY CATEGORIES

Fully Functional
Partially Functional
Recovery Capable

TO ADD/EDIT DATA

Figure 3-15 displays the Critical Component Repair method details. To **ADD/EDIT** data on this screen the user has to start by selecting the System or Subsystem

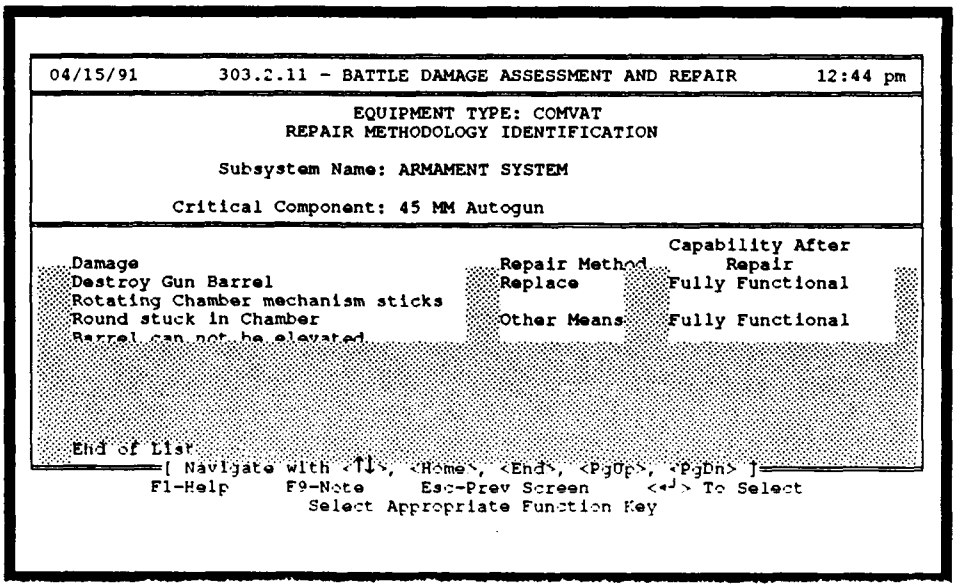

FIGURE 3-15: CRITICAL COMPONENT REPAIR METHOD DETAILS

To select Subsystem
Press ***<F8>***

Use the **UP-DOWN Arrow** keys to move the highlight bar. Highlight the required Subsystem name on the look-up window
Press ***<ENTER>***

When the Subsystem has been selected, the user is presented with a list of the Critical Components.

Use the **UP-DOWN Arrow** keys to move the highlight bar to the desired Critical Component
Press ***<ENTER>***

A list of all repairable damage conditions for the Critical Component appears on the screen.

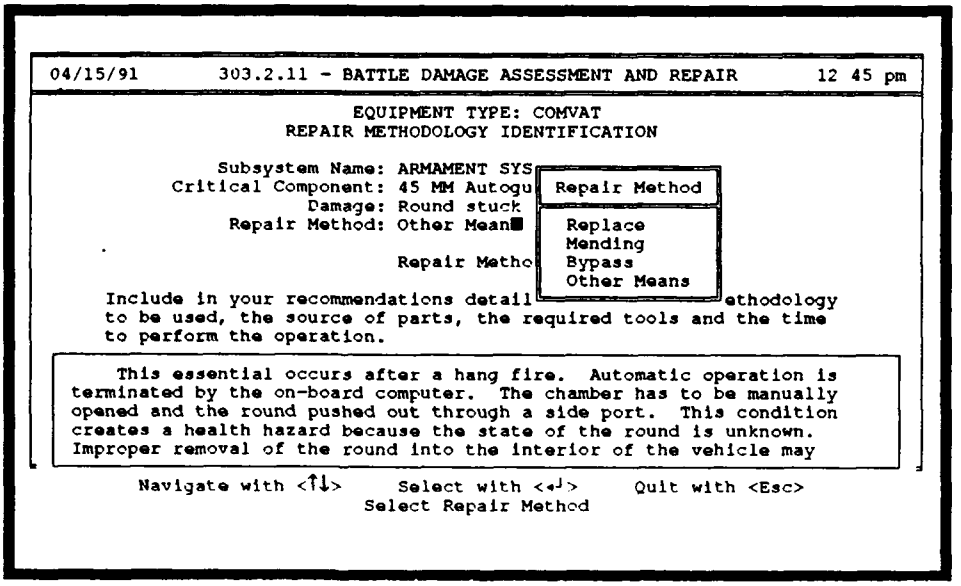

FIGURE 3-16: SELECT OPTIMAL REPAIR METHOD

Use the **UP-DOWN Arrow** keys to move the highlight bar. Highlight the damage condition that you wish to work on
Press ***<ENTER>***.

The highlight bar moves to the **REPAIR METHOD** field.

Press ***<ENTER>***

SELECT OPTIMAL REPAIR METHOD

A look-up window containing the four possible repair options appears on the screen (Figure 3-16).

Move the highlight bar to the appropriate repair method on the look up window
Press ***<ENTER>***.

A memo field appears on the screen. The analyst may use the memo field to enter the relevant details regarding the recommended repair method.

The screen works as full text word processor.
Type in ***<REPAIR METHOD DETAILS>***

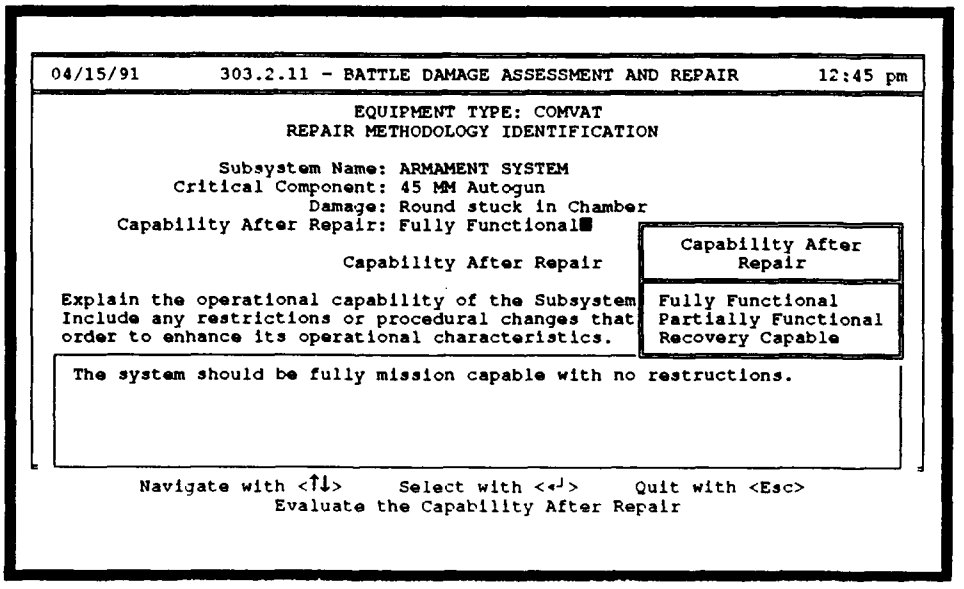

FIGURE 3-17: IDENTIFY CRITICAL COMPONENT CAPABILITY AFTER REPAIR

The Analyst must specify, in detail, the step-by-step procedure to be adopted in executing the repair. The user must also indicate the required resources.

To save the data entered in the memo screen.
Press ***<F10>***

Use the **RIGHT Arrow** key to highlight the **CAPABILITY AFTER REPAIR** field
Press ***<ENTER>***.

SELECT COMPONENT CAPABILITY AFTER REPAIR

The three options describing the state of the equipment after repair appears on the screen (Figure 3-17).

Use the **UP-DOWN Arrow** keys to move the highlight bar. Highlight the required capability condition
Press ***<ENTER>***.

A memo field appears on the screen. The analyst may use the memo field to enter the relevant details regarding the equipments operational condition after repair.

The Analyst must specify, in detail, the step-by-step procedure to be adopted in executing the repair. The user must also indicate the required resources.

The screen works as full text word processor.
Type in ***<CAPABILITY AFTER REPAIR DETAILS>***

To save the data entered in the memo field.
Press ***<F10>***

3.8 TASK/SUBTASK SUMMARY AND STATUS SCREEN

3.8.1 The **Subtask Summary and Status** Submodule is a separate entity by itself. It has no effect on the performance of the analysis. There is one record for each **EQUIPMENT-LSA TASK/SUBTASK** combination. The Submodule can only be accessed by a user with a **MANAGER** level access status.

SUBTASK SUMMARY AND STATUS

3.8.2 The purpose of this Submodule is to allow the Program Manager or analyst to input comments regarding progress and/or the performance of the task. The Submodule may also be used to address any areas which require special attention. It

provides the user with a memo field for comments on the analysis and its effect on program status.

CRITICALITY RATING OPTIONS

3.8.3 The analyst is also provided the opportunity to enter an overall assessment on the performance of the LSA Subtask for the equipment. The analyst may record areas which are critical and allocate a final criticality rating to the task. Three criticality ratings are available to the user. These are **RED**, **AMBER** and **GREEN**. This submodule cannot be accessed through any of the other submodules under the main LSA Task/Subtask module.

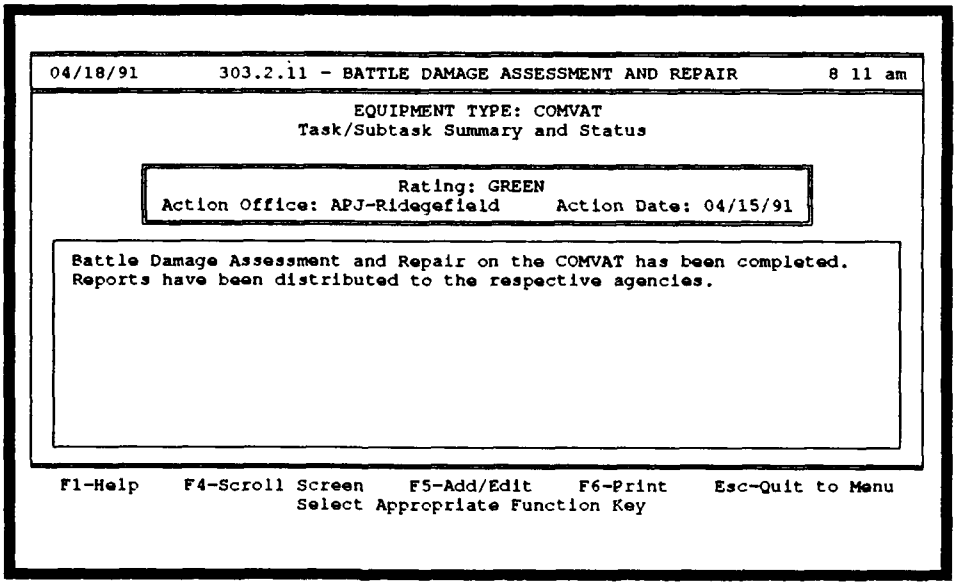

FIGURE 3-18: TASK/SUBTASK SUMMARY AND STATUS SCREEN

TO ADD/EDIT DATA

From the **MAIN MENU** select **SUBTASK SUMMARY AND STATUS**.

Use the **UP-DOWN Arrow** keys to move the highlight bar. Highlight the **SUBTASK SUMMARY AND STATUS** option.
Press ***<ENTER>***

Figure 3-18 displays the **SUBTASK SUMMARY AND STATUS** screen.

If there is no data in the database, the user is presented with blank fields on the screen. If there is data, the screen presents the existing data.

The user may add data to the screen or edit the existing data.

To perform either option
Press ***<F5>***

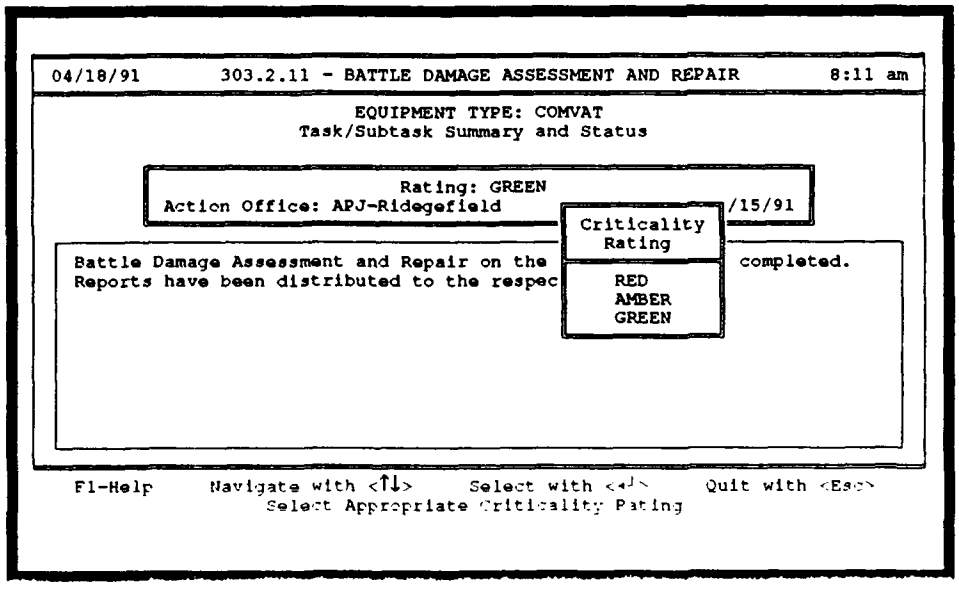

FIGURE 3-19: EDIT CRITICALITY RATING

SELECT CRITI-CALITY RATING

A look-up window containing the three criticality ratings appears on the screen (Figure 3-19).

Use the highlight bar to select the required rating
Press ***<ENTER>***

The cursor moves over to the **ACTION DATE** field.
Type in the ***<DATE>***

The selected date should be the date by which action is required to be taken on the note. It is not mandatory to enter any action date.

The cursor then moves over to the field marked **ACTION OFFICE**. It is not mandatory to fill in the Action Office name.
Type in the name of the ***<ACTION OFFICE>***

Before moving to the memo field the analyst is prompted to save the data entered in the memo header.

To save the data
Press ***<F10>***

The cursor then moves to the memo field

The analyst may add to the existing memo or edit the data on the screen. If there is no data the analyst may enter fresh data on to the screen.

Press ***<F10>*** to save data entered into the memo field

3.9 REVIEWING/PRINTING SUMMARY AND STATUS DATA

3.9.1 The user has a number of options available to output and review data entered on this screen.

3.9.2 To review the data entered into the memo field the user may have to resort to scrolling.

To scroll the screen
Press ***<F4>***

OUTPUT OPTIONS

3.9.3 The data on this screen can be output to three devices - **SCREEN**, **PRINTER** and **DISK** (Figure 3-20).

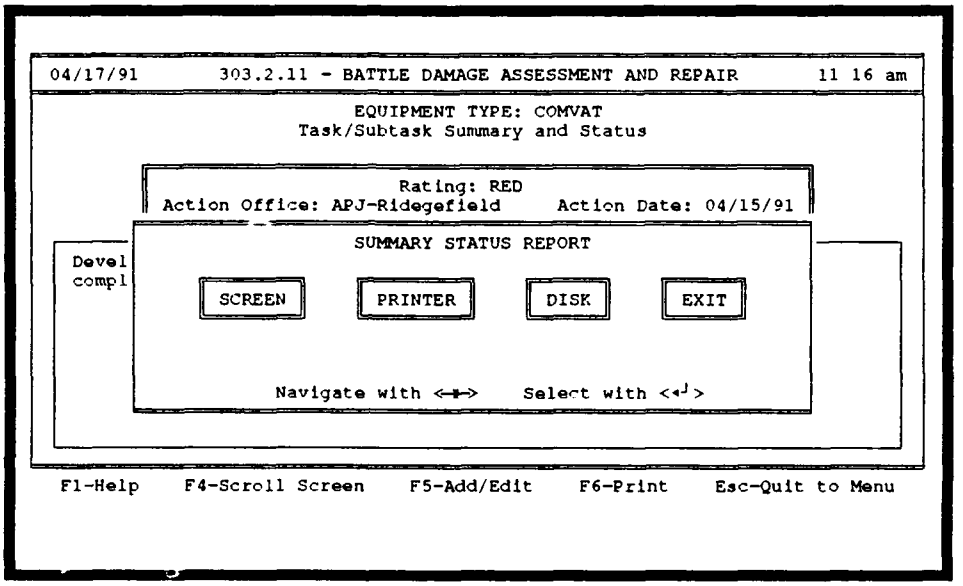

FIGURE 3-20: REPORT DESTINATIONS

To produce an output report
Press ***<F6>***

3.9.4 When **F6** is pressed, the program first generates the report, then the user is prompted to select an output device.

3.9.5 To view the report on the screen
Use the arrow keys to highlight the **SCREEN** option in the box
Press ***<ENTER>***

SELECT OUTPUT DESTIN-ATION

3.9.6 To send the report to the printer
Use the arrow keys to select the **PRINTER** option in the box
Press ***<ENTER>***

3.9.7 To save the report on a disk file

Use the arrow keys to select the **DISK** option in the box
Press ***<ENTER>***

Specify Path - Drive Name\Directory\Subdirectory\ File Name and Extension, e.g.,
C:\LSA\REPORTS\STATREP1.BDR

> **NOTE**
> The analyst must ensure that the printer type selected in the **MANAGEMENT MODULE** matches the printer being used at the terminal.

3.9.8 To exit to the **MAIN MENU** from this Submodule
Press ***<ESC>***

3.10 F9 NOTE FUNCTION

3.10.1 This function is designed to provide the analyst with an electronic notepad facility. The analyst may use this function at any time during the analysis to record facts or issues pertaining to the analysis.

F9 NOTEPAD FACILITY

3.10.2 This facility is available to the analyst on all screens. It can be accessed on any screen by using the **F9** key. There is only one record for each **EQUIPMENT-LSA TASK/SUBTASK** combination. This implies that if an analyst, while performing an LSA on an equipment, selects the **F9** key several times during the same session or different sessions, the same data screen will be presented to analyst. The analyst could either add more notes or edit the existing note.

3.10.3 The **F9** note function also incorporates a few fixed fields. Figure 3-21 shows the **F9 NOTE** screen. These fixed fields allow the analyst to attach attributes to the note. The three attributes that an analyst may attach to the note are the **CRITICALITY RATING, ACTION DATE** and an **ACTION OFFICE**. The three ratings available to the analyst are **CRITICAL, ROUTINE** and **NO ACTION**. It is mandatory for the analyst to attach a criticality rating to a note.

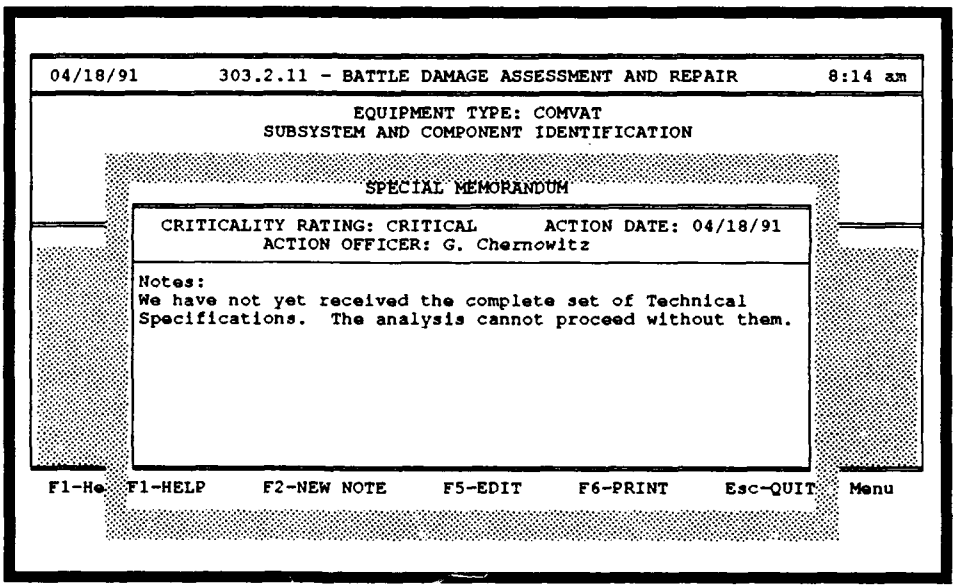

FIGURE 3-21: F9-NOTE

3.10.4 The **F9 NOTE** function also incorporates **HELP**. There are two types of **HELP** available to the user in this note function - **PROCESS METHODOLOGY** and **SOFTWARE GUIDANCE**. A detailed explanation of the types of **HELP** incorporated in the software appears in section 3.11

TO ADD/EDIT DATA

To use the **F9 NOTE** function
Press ***<F9>***

The **F9 NOTE** screen overlays on the existing screen

To Add/Edit data on this screen
Press ***<F5>***

SELECT CRITICAL-ITY RATING

A look-up window containing the three criticality ratings appears on the screen. Use the **UP-DOWN Arrow** keys to move the highlight bar to the desired criticality rating (Figure 3-22).
Press ***<ENTER>***

The cursor then moves to the **ACTION DATE** field
Type in the ***<DATE>***

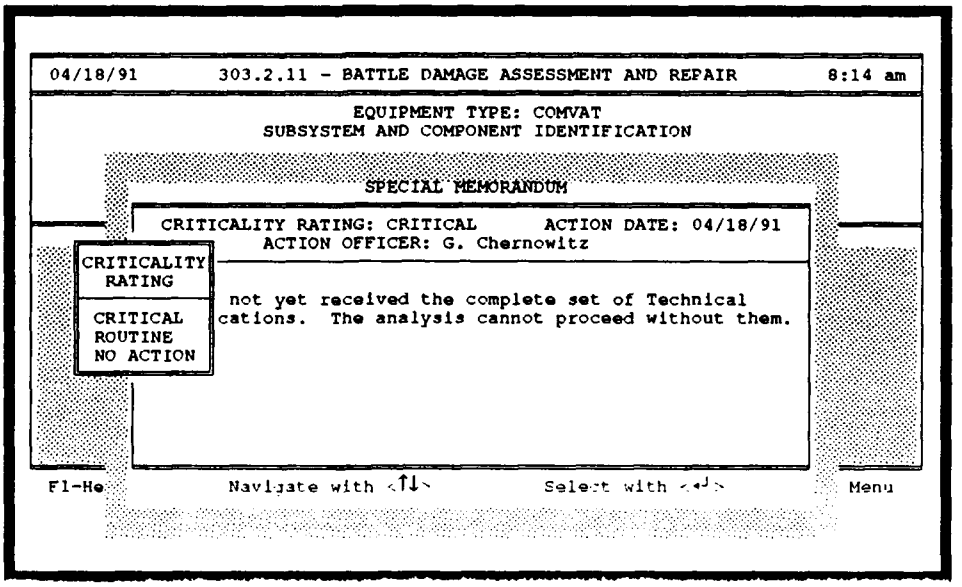

FIGURE 3-22: EDIT F9-NOTE CRITICALITY RATING

The cursor then moves to the **ACTION OFFICE** field
Type in the ***<ACTION OFFICE>***

To save data entered in the memo header
Press <F10>

The cursor then moves to the memo field. The analyst may type in any data in a narrative form into the memo field. The memo field works as a full text word processor.

To save data entered into the memo field
Press <F10>

3.10.5 The user has a number of options available to output and review data entered on this screen (Figure 3-20).

3.10.6 To review the data entered in the memo field, the user may have to resort to scrolling.

To scroll the screen
Press <F4>

SELECT OUTPUT DESTINATION

3.10.7 The data on this screen can be output to three devices - **SCREEN**, **PRINTER** and **DISK**.

To produce an output report
Press <F6>

3.10.8 When **F6** is pressed the program generates the report, then the user is prompted to select an output device.

3.10.9 To view the report on the screen
Use the arrow keys to highlight the **SCREEN** option in the box
Press <ENTER>

3.10.10 To send the report to the printer
Use the arrow keys to select the **PRINTER** option in the box
Press <ENTER>

3.10.11 To save the report to a disk file
Use the arrow keys to select the **DISK** option in the box
Press <ENTER>

Specify Path - Drive Name\Directory\Subdirectory\
File Name and Extension, e.g.,
C:\LSA\REPORTS\STATREP1.BDR

3.10.12 To start a **NEW NOTE**
Press ***<F2>***

> **NOTE**
>
> **The user is cautioned that starting a new note erases the old one. The analyst should save the old note to a disk or output a hard copy of the old note if this option is used. The software also displays an error message to this effect.**

3.10.13 To exit to the **MAIN MENU** from this Submodule
Press ***<ESC>***

3.11 HELP

3.11.1 The program has three levels of **ON LINE HELP**. They are:

AVAILABLE HELP OPTIONS

Process Methodology Help
Software Guidance Help
Context Sensitive Help

3.11.2 The first two types are **General Help** options and can be accessed only through menu selections. These two types of help are available only when the cursor is not in any of the data input fields (Figure 3-23).

3.11.3 The **Context Sensitive** help is available only when a data entry screen is displayed and the

cursor is on one of the data input fields (Figure 3-24).

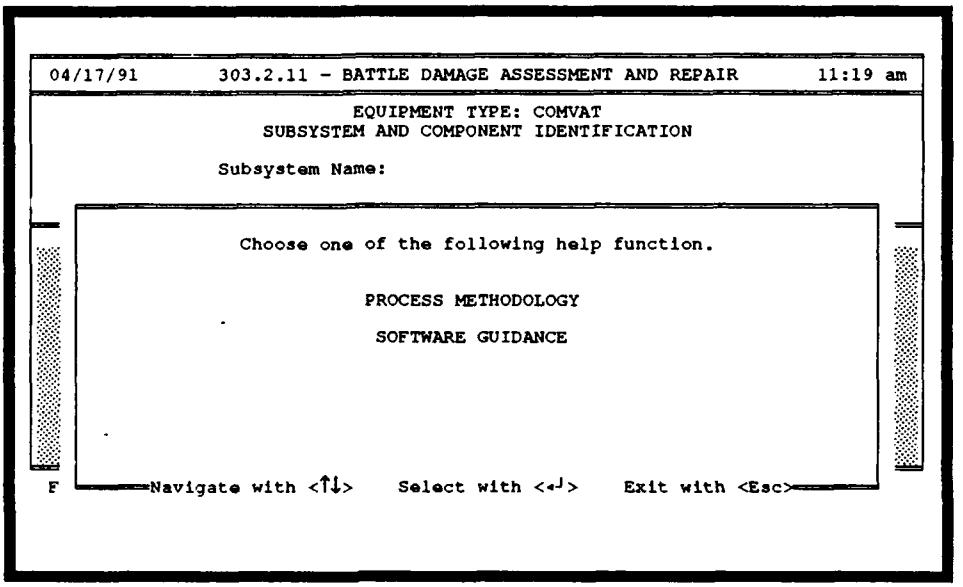

FIGURE 2-23: GENERAL HELP OPTIONS

PROCESS METHOD-OLOGY HELP

3.11.4 **Process Methodology Help** - The Process Methodology Help provides the user with guidance on how to accomplish the process. It advises the user on the documents required and describes in detail the steps required to complete the process. This part of the Help facility is essentially a reproduction of **ANNEX** 'C' of APJ Report 966-230.

SOFTWARE GUIDANCE HELP

3.11.5 **Software Guidance Help** - The software guidance Help is a walk through the entire software. It tells the user exactly what to expect when he selects an option or depresses a button on the keyboard.

CONTEXT SENSITIVE HELP

3.11.6 **Context Sensitive Help** - This form of on-line Help is only available with the Battle Damage Assessment and Repair module of the LSA Software. This form of **HELP** provides the user with guidance

when the cursor is in one of the data input fields. It tells the user exactly what type of data is to be put into the field, the field width and the field type (Figure 3-24).

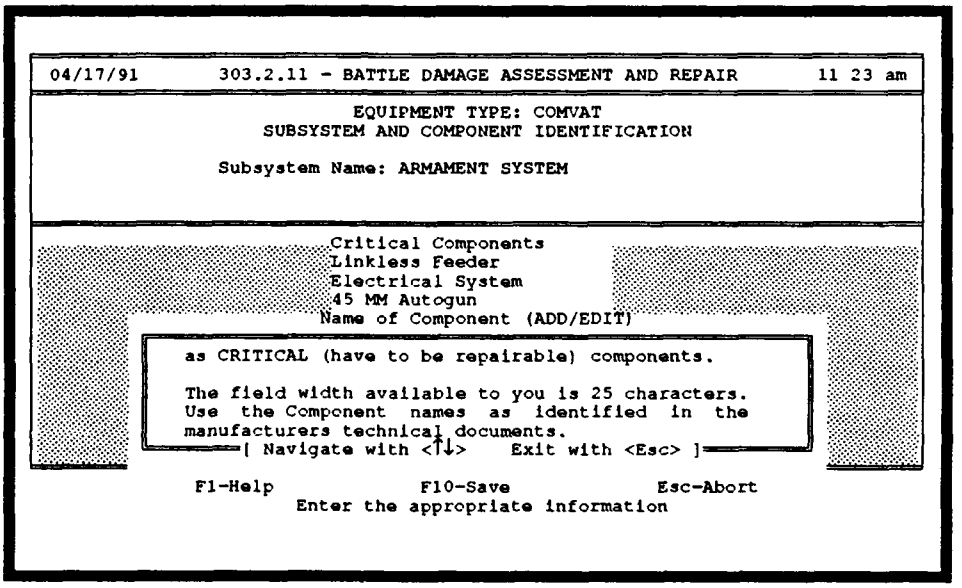

FIGURE 3-24: CONTEXT SENSITIVE HELP

3.11.7 The user may access **HELP** at any stage of the program.

To **ACCESS HELP**
Press ***<F1>***

CHAPTER 4
REPORTS GENERATION

4.1 GENERAL

GENERAL

4.1.1 This chapter provides the user with information needed to generate reports in support of the Battle Damage Assessment and Repair module. Prior to entering the **Reports Submodule**, the analyst is required to go through the **LOG-ON** procedures and select the Equipment.

4.1.2 The user should review the detailed LOG ON procedures provided in the Executive Manual and the Quick Start procedures described in Chapter 2 of this manual.

4.1.3 This module contains reports specific to LSA Subtask 303.2.11 - Battle Damage Assessment and Repair module. The reports module does not allow the generation of the F9 NOTE report and the Subtask Summary and Status report. The output reports for the F9 NOTE and the Subtask Summary and Status functions can be generated directly from their respective data entry screens.

4.1.4 The software incorporates several print drivers. The user is advised to refer to the Executive manual to confirm whether the software is compatible with the printer type in use.

4.2 REPORT OPTIONS

4.2.1 LSA Subtask 303.2.11 - Battle Damage Assessment and Repair module contains four reports. The report options are presented to the user on the reports menu screen.

4.2.2 This module generates the following reports:

Equipment Damage Assessment Report

REPORT OPTIONS

Design Modification Detail Report
Repair Methodology Report
System/Subsystem Capability Report

EQUIPMENT DAMAGE ASSESSMENT REPORT

4.2.3 **Equipment Damage Assessment Report** - This report provides an assessment of the damage to each one of the critical components for a Subsystem. The report lists, for each subsystem, the critical components with the possible damages. It further classifies the various the damages into two groups:

Requiring design modifications
Repairable on the battlefield

A sample Equipment Damage Assessment Report is provided in Appendix 'D' page D-2.

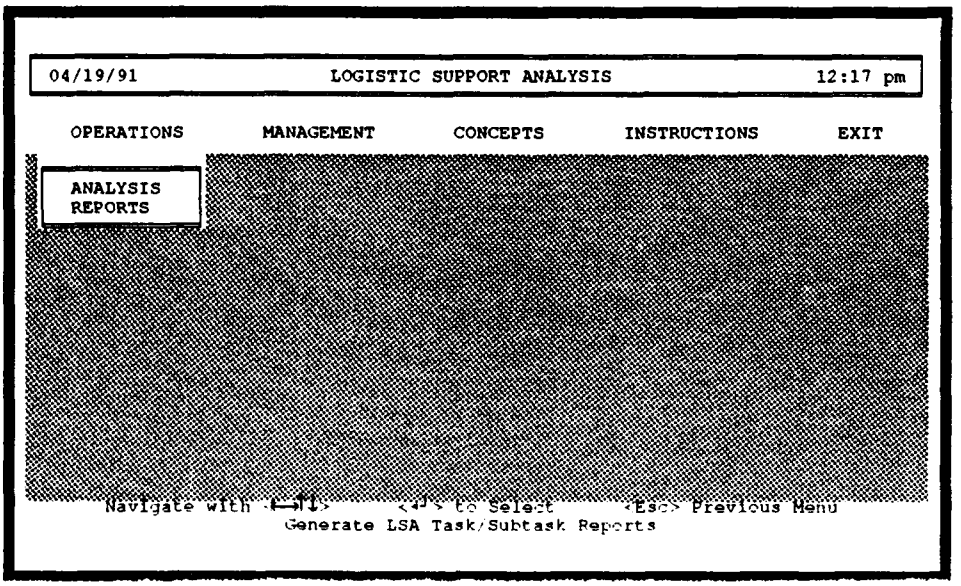

FIGURE 4-1: EXECUTIVE MODULE MAIN MENU

4.2.4 **Design Modification Detail Report** - This report presents a detailed discussion on required design modifications. For each subsystem, it lists

DESIGN MODIFICATION DETAIL REPORT

the critical components, the damage and detailed description of the required change. See Appendix 'D' page D-3 for a sample of the Design Modification Detail Report.

4.2.5 **Repair Methodology Report** - Appendix 'D' page D-5 is a sample of the Repair Methodology Report. This report provides a detailed discussion of the optimum repair method to be adopted to repair the critical component on the battlefield. This report lists the critical component for each Subsystem, their damages and the details of the repair methodology for rectifying the failure.

REPAIR METHODOLOGY REPORT

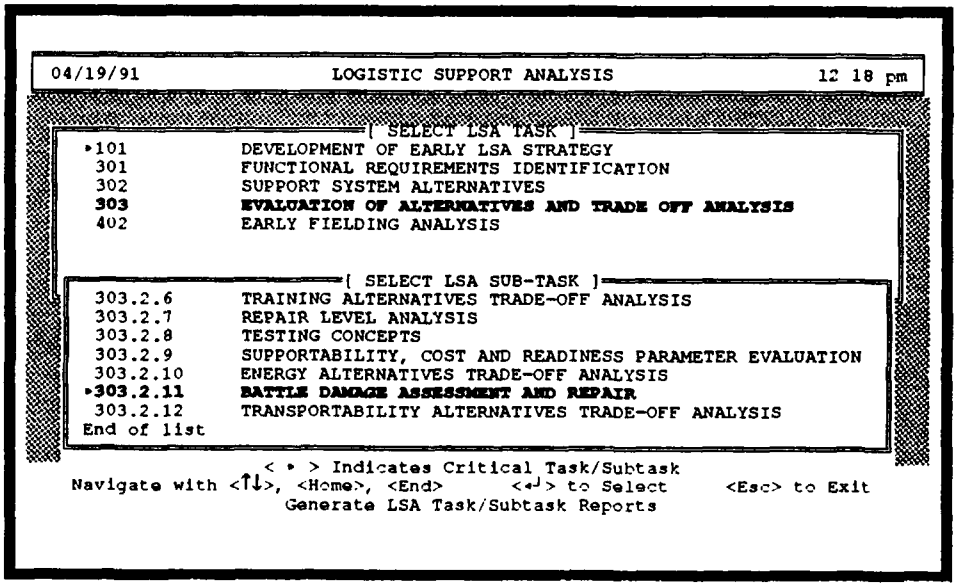

FIGURE 4-2: SELECT LSA MODULE

4.2.6 **System/Subsystem Capability Report** - Appendix 'D' page D-7 is an example of the System/Subsystem Capability Report. This report describes in detail the capability of the Critical Component after repair. It lists the critical components for each Subsystem and describes its

SYSTEM SUBSYSTEM

CAPABILITY REPORT

functional capability as being Fully Functional, Partially Functional or being only Recovery Capable.

TO GENERATE REPORTS

To generate reports in the Battle Damage and Assessment module:

Use the **LEFT-RIGHT** arrow keys to move the highlight bar (Figure 4-1)
Select ***<OPERATIONS>***
Press ***<ENTER>***

Use the **UP-DOWN** arrow keys to move the highlight bar
Select ***<REPORTS>***

GENERATE REPORTS

Press ***<ENTER>***

Use the **UP-DOWN** arrow keys to move the highlight bar (Figure 4-2)
Select ***<303>***
Press ***<ENTER>***

Use the **UP-DOWN** arrow keys to move the highlight bar
Select ***<303.2.11>***
Press ***<ENTER>***

NOTE

The analyst must ensure that the printer type selected in the **MANAGEMENT MODULE** matches the printer being used at the terminal.

On the Reports Menu

Use the **UP-DOWN** arrow keys to move the highlight bar to the desired report (Figure 4-3)
Press ***<ENTER>***

VIEW REPORTS

From the report destination control box make the appropriate selection (Figure 4-4)

OUTPUT REPORT TO PRINTER

To view the report on the screen
Select ***<SCREEN>***
Press ***<ENTER>***

To print the report
Select ***<PRINTER>***
Press ***<ENTER>***

SAVE REPORT TO DISK

To save report to a disk file
Select ***<DISK>***

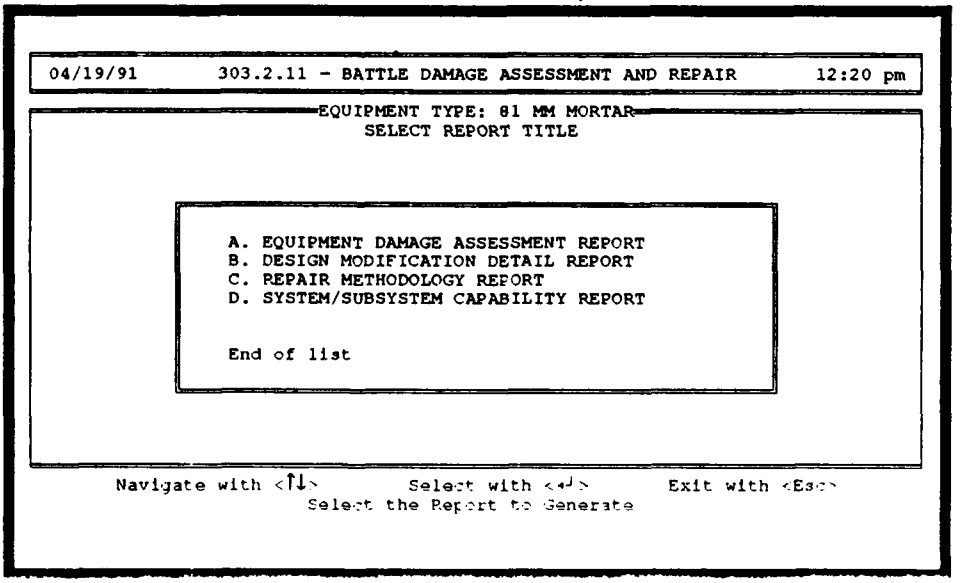

FIGURE 4-3: BATTLE DAMAGE REPORTS MENU

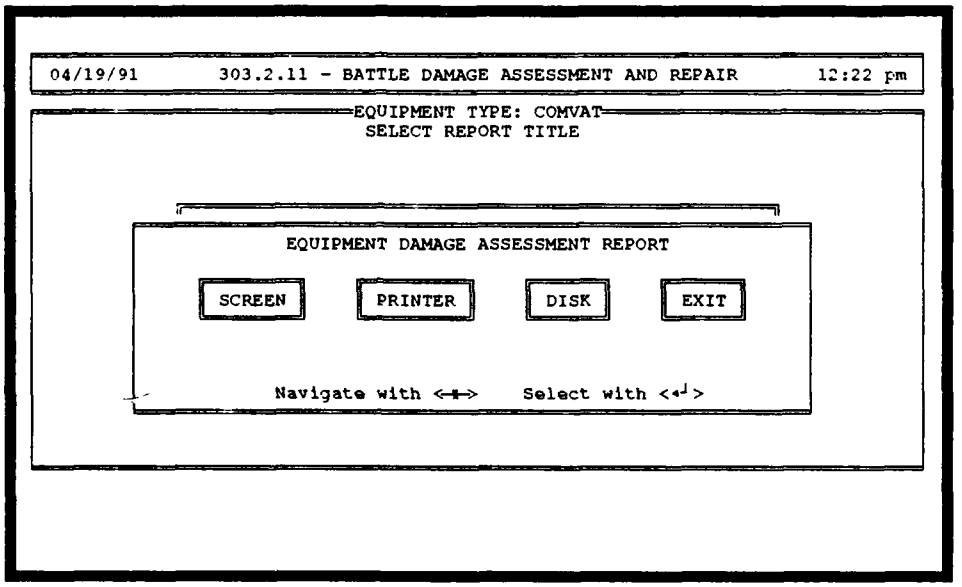

FIGURE 4-4: OUTPUT DESTINATIONS

Press ***<ENTER>***

Specify Path - Drive Name\Directory\Subdirectory\
File Name and Extension, e.g.,
C:\LSA\REPORTS\REP1

APPENDICES A THROUGH D

SYSTEM REQUIREMENTS

PC WITH 640 KB RAM
20MB HARD DISK
ONE 360 KB FLOPPY DRIVE
EGA CARD
MONOCHROME OR COLOR MONITORS

DOS VERSION 3.3

PRINTERS - EPSON
- IBM PROPRINTER
- HP LASER JET
- TI LASER PRINTER
- PANASONIC

LIST OF REFERENCE DOCUMENTS

AR 70-1	Systems Acquisition Policy and Procedure
AR 750-1	Materiel Maintenance Concepts and Policies
AR 700-127	Integrated Logistics Support (ILS)
MIL-STD-1388-1A/2A	Logistics Support Analysis
MIL-M-63003	Preparation of BDAR TM's
AMCCOM R 750-5	Battle Damage Assessment and Repair
MIL-STD-881	
	Engineering Drawings and Technical Specifications of the Equipment, System and Subsystem from the Program Managers Data File
	Design Specifications from the Acquiring Activity File
	Required Operational Characteristics
	O & O Plan
	Level of Repair Results
	LSA Executive Users Manual

LIST OF REFERENCE FILES

LIST OF REFERENCE FILES

EXECUTIVE FILES

LSA	EXE	RCPRNCOD	CTL
LSAOVL	OVL	RCWELCOM	MEM
		RCSCR31	TXT
RCANLYHS	DBF		
RCANLYHS	NTX	RCPRNCTL	DBF
RCANLYST	DBF	RCPRNLST	DBF
RCCXHLP	NTX	RCPRNLST	NTX
RCCXHLP	DBT	RCSESSN	DBF
RCCXHLP	DBF	RCSESSN	NTX
RCEQHS	NTX	RCSTATUS	DBF
RCEQHS	DBF	RMTSKTAG	NTX
RCEQUIP	NTX	RMTSKTAG	DBF
RCEQUIP	DBF	RSF9HLP	DBT
RCLSATSK	DBF	RSF9HLP	DBF
RCLSATSK	NTX	RSF9HLP	NTX
RCMENU	DBF	RSUMSTAT	DBT
RCMENU	NTX	RSUMSTAT	NTX
RCPRHLP	DBF	RSUMSTAT	DBF
RCPRHLP	DBT	RSUMSTHS	NTX
RCPRHLP	NTX	RSUMSTHS	DBF
		RSUMSTHS	DBT

LIST OF REFERENCE FILES

LSA 303.2.11 FILES

R111A	DBF
R111A	NTX
R111B	DBF
R111B	NTX
R112	NTX
R112	DBF
R112	DBT
R1CXHLP	NTX
R1CXHLP	DBT
R1CXHLP	DBF
R1NOTE	DBT
R1NOTE	DBF
R1PRHLP	NTX
R1PRHLP	DBF
R1PRHLP	DBT
R212LST1	DBF
R212LST1	NTX

SAMPLE OUTPUT REPORT FORMATS

Page No. 1 Report Date: 04/19/91

BATTLE DAMAGE ASSESSMENT AND REPAIR
LSA SUBTASK 303.2.11

EQUIPMENT DAMAGE ASSESSMENT REPORT

Analyst: CANDY K. TONG **Equipment: COMVAT**
Office: APJ **Common Name: COMVAT**
NSN: N/A

SUBSYSTEM: ARMAMENT SYSTEM

DAMAGE	FUNCTION LOST	REMEDY
COMPONENT: LINKLESS FEEDER		
COMPONENT: ELECTRICAL SYSTEM		
COMPONENT: 45 MM AUTOGUN		
DESTROY GUN BARREL	CAN'T SHOOT	REPR
ROTATING CHAMBER MECHANISM STICKS	CAN'T LOAD	REPR
ROUND STUCK IN CHAMBER	CAN'T LOAD OR SHOOT	REPR
CHAMBER ACUATOR JAMS	CAN'T LOAD	DSGN
BARREL CAN NOT BE ELEVATED	LONG DISTANCE FIRING	REPR
COMPONENT: FIRE CONTROL SYSTEM		
ELECTRONIC UNITS GET HIT BY FRAGS	TARGET ACQUISITION	REPR
SIGHT LENS GETS CRACKED	IMPAIRED TARGET RECOGNIZTION	DSGN
DISPLAY OVERHEATS AND FAILS	BATTLEFIELD SURVEILANCE	REPR
FIRE CONTROL SENSOR SHORTS	TARGET ACQUISTION	REPR
ECU CARD THAT CONTROLS TURRET MOVE	ENGAGEMENT OF TARGET	REPR

********** End of Report **********

BATTLE DAMAGE ASSESSMENT AND REPAIR
LSA SUBTASK 303.2.11

DESIGN MODIFICATION DETAIL REPORT

Analyst: CANDY K. TONG	**Equipment: COMVAT**
Office: APJ	**Common Name: COMVAT**
	NSN: N/A

SUBSYSTEM: ARMAMENT SYSTEM

DAMAGE **RECOMMENDED DESIGN MODIFICATIONS**

COMPONENT: LINKLESS FEEDER

COMPONENT: ELECTRICAL SYSTEM

COMPONENT: 45 MM AUTOGUN

CHAMBER ACUATOR JAMS

The Chamber Acuator mechanism is used to buffer the cannon recoil and open/close the rotating chamber. The Chamber Acuator consists of the following items:

Recoil Springs
Viscous Damper
Ringsrping Package
Counter Recoil Buffer
Chamber Sprongs
Chamber Close Buffer

This assembly has a tendency to fail during high usage periods. During enemy engagement, the Weapon System fires at 200 rps rates in 3-5 round burst. For a ten minute battle the cannon may fire 125 rounds. This activity caused the Chamber Acuator to jam.

Battlefield repair is difficult because disassembly of this mechanism is hambered by the linkeless feed system which is in front of the Chamber. In addition, the are a large nunmber of loose springs, sprockets, and

Page No. 1 Report Date: 04/19/91

BATTLE DAMAGE ASSESSMENT AND REPAIR
LSA SUBTASK 303.2.11

REPAIR METHODOLOGY REPORT

Analyst: CANDY K. TONG	**Equipment: COMVAT**
Office: APJ	**Common Name: COMVAT**
	NSN: N/A

SUBSYSTEM: ARMAMENT SYSTEM

COMPONENT: LINKLESS FEEDER

Damage:
Repair Method:

DATA NOT AVAILABLE

COMPONENT: ELECTRICAL SYSTEM

Damage:
Repair Method:

DATA NOT AVAILABLE

COMPONENT: 45 MM AUTOGUN

Damage: DESTROY GUN BARREL
Repair Method: REPLACE

The gun barrel weighs 500 hundred pounds and therefore can't be carried in the vehicle. However in the combined arms team scenario, direct support supply vehicles will be traveling with the main battle force. During the battle if the barrel is destroyed the vehicle will have to rely on secondary armament (e.g. the machine gun and TOW).

After the battle, the supply vehcile will have to move forward with the spare barrel. Either a sling system or a

BATTLE DAMAGE ASSESSMENT AND REPAIR
LSA SUBTASK 303.2.11

SYSTEM/SUBSYSTEM CAPABILITY REPORT

Analyst: CANDY K. TONG	**Equipment: COMVAT**
Office: APJ	**Common Name: COMVAT**
	NSN: N/A

SUBSYSTEM: ARMAMENT SYSTEM

COMPONENT: LINKLESS FEEDER

Damage:
Lost Function:

CAPABILITY AFTER REPAIR	**DETAILS**
DATA NOT AVAILABLE	

COMPONENT: ELECTRICAL SYSTEM

Damage:
Lost Function:

CAPABILITY AFTER REPAIR	**DETAILS**
DATA NOT AVAILABLE	

COMPONENT: 45 MM AUTOGUN

Damage: DESTROY GUN BARREL
Lost Function: CAN'T SHOOT

CAPABILITY AFTER REPAIR	**DETAILS**
Fully Functional	The Arament System should be fully operational. At this time, the procedures to ensure safe operation after barrel replacement have not been fully defined. It is important that a saftey check be conducted after removing and replacing the barrel. This needs to be done before test firing. In addition a cheap and simple test

Page No. 1 Report Date: 04/19/91

BATTLE DAMAGE ASSESSMENT AND REPAIR
LSA SUBTASK 303.2.11

SUMMARY STATUS REPORT

Analyst: CANDY K. TONG	**Equipment: COMVAT**
Office: APJ	**Common Name: COMVAT**
	NSN: N/A

ACTION OFFICE: APJ-RIDEGEFIELD **ACTION DATE:** 04/15/91

RATING: GREEN

Battle Damage Assessment and Repair on the Comvat has been completed. Reports have been distributed to the respective agencies.

F9-NOTE REPORT

Page#: 1 Report Date: 04/19/91

MEMORANDUM

From: C. TONG
Entry Date: 04/18/91

Action Officer: G. Chernowitz
Action Date: 04/18/91

Equipment: COMVAT
LSA Task/Subtask: 303.2.11

Criticality Rating: CRITICAL

We have not yet received the complete set of Technical Specifications. The analysis cannot proceed without them.

INDEX